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The Romance of Architecture.

WHAT our poets have found in architecture to illustrate and enrich their art has been dwelt upon at some length in past numbers of the *Builder*;* what architects may find of Poetry within the bounds of their own art, severe and prosaic though it be in common estimation, is proposed as a subject for brief consideration in the present article. Much has been said and written in late years with a view to prove that architecture has in reality no claim to be considered a Fine Art, but is merely a rather better form of the ordinary result of the combined products of the handicrafts concerned in building. One argument not infrequently used in this direction has been that any one may dub himself "architect," and practise as such; but it has not been shown that any one so assuming the craft will consequently produce *architecture*. It is a misfortune for our art that its title, and implied practice, can be so assumed without due training and study; but it is a misfortune shared by what are regarded as undoubted fine arts,—sculpture, namely, and painting,—and with regard to these it is equally true that the mere assumption of the *title* and professed production of the *work* of "an artist," by no means carry any assurance that "fine art" will really be found as a result.

A good deal of flimsy "tall talk" is at times indulged in by some who assume the critic's chair, on the superiority of painting and sculpture in the region of art as compared with architecture, on account of the technical, and, even mechanical, features attaching to the practice of the latter; but does not such "talk" betray rather more than a slight deficiency of critical knowledge with regard to the arts which it is sought to exalt? To produce either good sculpture or painting, or any indeed that will be thought worth twice looking at by an educated artist or informed connoisseur, an amount of technical skill, to be acquired only by long and patient labour and study, must appear on the face of such work, which will be found not much behind that which must be apparent in an architect's working designs, the mechanical elements comprised in the latter notwithstanding.

The more strictly practical details involved in executed architectural work constitute one great difficulty in the successful practice of the art, and when truly met and overcome, so that they do not mar or damage the character of the work in respect of form, chiaroscuro, or breadth, such conquest entitles the designer to almost higher praise than attaches to the successful sculptor or painter; *their* arts, from their almost purely ornamental nature, having an elasticity and ductility, in skilled hands, which architecture, for use, can never admit of.

There are those, and they are many, who cannot see in architecture, apart from associations of archæology or antiquity, anything to interest the higher mental perceptions; but there are those also, and not a few, whose pleasure, not unintelligent, in painting and sculpture, has a somewhat similar limitation; while a good many, with a fair knowledge of schools and masters, find more enjoyment in the manipulative skill and mechanical decision displayed than in the sentiment of the productions on which these are lavished.

Thus, it may be seen that it is not in architecture only that the *technical* can prevail over the *intellectual* of art, but that it rests, in great measure, with the mental calibre of the observer which of the two shall assert supremacy in his preference; while to architecture, as distinct from the simply ornamental arts, attaches the necessity, under corresponding penalty, of satisfying at once the practical requirements of its particular use, and the demands of good taste and refinement in external form.

The distinction has to be made between *architecture*, properly so-called, and mere *building*, however elaborated and (would-be) *adorned*; and this distinction is by no means a matter of intuition, but a power to be acquired, like a knowledge of painting or sculpture, only by study and observation exercised by a mind naturally sensitive to the impressions of art.

Thus much towards clearing our ground: and now to our more specific subject.

Though a large proportion of the lads who are from year to year articled as pupils to architects are so placed rather as a matter of business, or, perhaps, on account of some aptitude shown for drawing, than from any natural taste for the art itself, a good many, it is satisfactory to know, do take up the pursuit on the latter ground, and may be looked upon as forming "the band of hope" for the profession. To such as these the first experiences of an architect's office are for the most part depressing rather than elevating; and though the fact that they are acquiring the anatomy of the art may to the more practical of such students prove a comfortable set-off to the drudgery of tracing and specification copying (the latter, however, not to the advantage of their training, being now too often delegated to the quantity surveyor and his clerks), to a large proportion of pupils these mechanical processes act as a great damper upon any aspirations towards the poetry, or, as we are styling it, the *romance* of their chosen craft. Far more, however, was this the case a generation ago, when, except the medals of the Royal Academy, there were scarcely any prizes offered in this country for aspirants to architectural fame; and the few young men who were enrolled as architectural students in the Academy competed for the medals under stated or implied restrictions which imposed very definite limits to their flights of imagination. The pretty numerous medals, scholarships, and the like, now open to the architectural student afford a fair field for exercising his power of design; while not only the central associations in London, but others in the provinces, give this form of encouragement to their student members, and have thus afforded, as we could bear witness, the first introduction to notice of more than one since successful practitioner. Competitions of this kind, whether within the narrow limits of a provincial society or in the wider field of the Institute or Association, afford many a student his best opportunities for rising above the mechanical part of his calling, and putting into visible shape for consideration by competent critics (a very essential point) the results of perhaps many a dream of design and many a bout of sketching; and surprising sometimes are, as to feeling and fancy, these early productions of some who are destined, perhaps, a few years later to hold a prominent place among their country's artists. A success in some such contest of skill forms for such students a true taste of the romance of architecture, and serves to lift them above the mechanical monotony of a mere routine of occupation, when, as we have some times too much occasion to recognise, a principal has not been of capacity to recognise the genius and power of his pupil. Next to the absolute carrying out of some long-cherished form of design, is to the architectural designer of skill the opportunity of thus placing it completely in shape on paper, and architects who have the advance and dignity of their calling truly at heart will do well to offer to a student of this character all encouragement and every wholesome stimulus to exercise his powers of mind and hand in this manner while engaged in studying, as a subaltern, what we may call the manufacturing part of the profession.

To gain an Academy Gold Medal or one of the Travelling Studentships annually offered as a prize, is at once an introduction to public notice; and we may well excuse a young man if, in the excitement of such a success, he for a time takes a view of his profession not quite

* See "Architecture Among the Poets," vol. xliv. (Jan. to June, 1883), pp. 491, 528, 558, 628, 696, 764.

in accord with the experience of its practised members. No great harm will result from a little temporary intoxication of this kind; it may give a very wholesome stimulus towards stepping above a dead level of trite conventional design, and there is no fear but that a little intercourse with the world in the business relations which always accompany a practice will, ere very long, teach lessons well calculated to temper a too ardent pursuit of the romantic. A great responsibility rests with those in whose hands remain the decisions in such contests of mind and fancy, that they be most impartially and justly awarded, and that the hobbies of professors or the hackneyed preferences of jog-trot practitioners be not allowed, as has sometimes appeared to be the case, to interfere with the full and free recognition of previously unobserved talent or genius.

The power exercised over human feeling, especially when prepared by suitable aptitude and cultivation, by the attributes of proportion, light, and colour, belongs to all the arts appealing to the eye; and it is a mystery of our intellectual constitution that form, light, and colour should assert this sway. Architecture has its power within this mystic triangle, and chiefly on the sides of proportion and light, of the three the most powerful in union; and it is not surprising that men intensely sensitive to their impressions should have revelled in their effects on canvas and paper when debarred by circumstances from putting them into actual form in building. Two names occur to us in this connexion of those who, scarcely within the pale of practical architecture, so lived in architectural feeling that their art is inseparably identified with the very essence of architectural romance, viz., G. B. Piranesi in the eighteenth century and John Martin in the nineteenth.

The various lines of thought which open to us in following a subject like our present might well lead us to an extended essay on architectural design, a topic by no means threadbare, but one only point of which we here diverge on for a moment,—a point suggested by the names just written. The greatest test of successful design in our art may be considered to rest in its combining happily with, and indeed enhancing, the charms of fine natural landscape, and the great landscape-painters of the Renaissance period evince their sense of its value by the manner in which it is found forming an essential part of many of their great epic compositions. Piranesi and Martin both, in their powerful but widely differing manners, laid hold of architecture as their theme, associating its objects with grand vistas of perspective, and strong effects of chiaroscuro. Colour in the case of the earlier artist was only expressed in the *tone* of his etchings, and in the work of Martin was generally greatly subordinated to effect of light and shade. The ruins of ancient Rome in the case of Piranesi, and compositions chiefly from Scriptural themes by Martin, were made the vehicle of impressions of power, vastness, and solemnity, conveyed with all the force and vividness of true genius; and their works afford (making every allowance for Martin's bad figures and theatrical conceptions) strong proofs of the inherent fitness of architectural forms to produce those impressions which, in a subordinate degree, they were, by landscape painters like Claude Lorraine and Gaspar Poussin, introduced into their pictures to enhance. Piranesi indulged occasionally in grand compositions, both of external and internal architecture, other than his beloved Roman remains, and most impressive some of these are; both artists having the faculty of so treating their subjects that they lay hold of the minds and imaginations of their beholders and fix themselves indelibly in the memory.

The romance of architecture, indeed, in its truest sense, and apart from the trammels of its practice, these works and such as these exemplify; but the practical architect is not dependent on imagination alone, with no *solid* instances, for his enjoyment of this high reward of his skill. If travel at home and abroad, if careful sketching and laborious study, bring him into sympathy with the great remains and precious gems of ancient and Mediæval art, he must in a measure, if at all worthy of his vocation, be led to aim at the production of like effects and impressions in his own work; and though much of it will in the common course of practice preclude, perhaps entirely, any aim at the poetry of art, he will be on the watch to use to his best whatever opportunities may fall to his lot for the more refined exercise of his skill. Many an architect could share in the feeling of Fitzjames's soliloquy at the Trossachs:—

> . . . . "What a scene were here, he cried,
> For princely pomp or churchman's pride!
> On this bold brow, a lordly tower;
> In that soft vale, a lady's bower;
> On yonder meadow far away,
> The turrets of a cloister grey."

Varying with the scene before him his ideas of the architectural objects fitted to adorn it; and now and then (which is perhaps often enough) it may be his fortune to realise his day-dream. We can imagine the zest with which the Villa Borghese may have been thought out and executed by its architect, or the steeple of Boston church raised from the fen level towards the sky by its designer. An architect may have travelled in Italy, say, or Spain, and delighted with the charms of character and appropriateness marking their respective buildings may feel how he should rejoice in a commission to build even a small homestead or villa in such fitting scenery. His sketches may be known, and some day a returned traveller of rank or wealth from the land of the Alhambra may apprise him that, having bought a small estate in a part of that country which greatly captivated him, he wished a house built upon it to which he and his family might, from time to time, retire for a winter's residence,—and here is *this* architect's poetic dream realised. Another, born among the scenes of ancient Border strife, has grown enamoured, as he grew familiar, with the intensely picturesque remains of the feudal strongholds which Border life once made essential to security. He may have had some of the still inhabited of these under his hands for renovation, perhaps enlargement; and he has, with success, lavished his best skill and knowledge to preserve the original character which he was conversant with; but in these piping times of peace who would build a castle? However, a wealthy landowner, with estates in far-apart counties, has no house of fitting scale or in a proper position on his favourite manor, and (after making, perhaps, a costly mistake in not coming at once to the right man) is advised by his friends to call in Mr. ——, and on a splendid site, on the shoulder of a hill, in a valley of far-famed beauty, arises in due time a *modern castle*, it is true, but one so true to the genius of the scene, and so conducive to the charms of the scenery, that the anachronism seems fully justified, and those most familiar with it can scarcely realise how it could have looked before the castle was built. This, too, is a genuine realisation of architectural romance, and of a kind the high pleasure of which a man must be an architect to understand. Take another example. An enthusiastic lover of Classical architecture, a beautiful draughtsman, and an artist by nature through and through, is tied down during his pupilage and early practice to all the mechanical drudgery of a City office, mainly concerned with a surveying practice. He keeps his hand in, however, for his favourite work, and with some few congenial fellow students exercises the talent for Classical design with which he is inspired, hoping that some day he may have a chance of carrying out some of his ideas. A great provincial competition is announced, and among designs of varied style and merit, some businesslike (some, perhaps, tradesmanlike), some extravagant, some impracticable, but in the whole representing 10,000*l.* worth of voluntary labour, one design stands out so distinguished for originality and power of treatment, and beauty, though freedom of execution, that it engrosses the attention of the assessors, and, despite evidences of inexperience in plan and some difficulties of adaptation, its *beauty* carries it to the first place, and the day dream of the young enthusiast is realised; though alas! in the instance referred to, to lead through overwrought mental and physical energy to an early though distinguished grave.

Smaller, far smaller, triumphs than these may at times afford an architect a good measure of that high mental enjoyment which results from the conscious achievement of success in the difficult task of trespassing on a landscape to its advantage. "Ah! Mr. B.," says, with a grieved air, the cultivated, reserved, and sensitive vicar of a small, picturesque, country parish, "so you are going to spoil our pet view from the vicarage windows by building a manager's house for Mr. C.'s paper-mills just at the top of the hill."

"By no means, Mr. D.," replies our architect; "I hope to improve your view by breaking the round of the hill just where it needs it."

"Oh! impossible," responds the vicar, "any house there *must* spoil it; just, you know, at the top of the hill, and so near us too."

"It will not be at the top of the hill, Mr. D., but just below it, and when the house is built I confidently hope to hear you say your landscape is better for it."

With a shrug, a deep sigh, and an incredulous shake of the head, the vicar proceeds on his parish round, and the manager's house, cheap and unpretending, but *carefully not ugly*, and as carefully studied as to its exact position below the crest of the hill, in course of time rises against the sky. The architect, when the roof is framing, walks past the vicarage on one of his visits of inspection, to view the eyesore, and sees that he has gained his aim. The house is finished, however, and occupied before he again meets the vicar, and when he catches sight of him he is rather nervous as to what the good gentleman may have adopted as his *settled* opinion, for *settled* his opinions were. He need not have been nervous, as he is greeted with a hearty shake of the hand, and "Thank you, Mr. B.,—you *have* kept your promise, and much as I dreaded your building anything on my favourite slope, now that the house is up I agree with you that it is exactly in the right place, and decidedly improves the line of our middle distance." An architect of *feeling*, as all should be, will be himself very sensitive to the intrusion of new buildings on a cherished view, and *as* sensitive on behalf of those he himself intrudes them on; and the success of a difficult problem such as just described (a real case) is a very material and legitimate source of pleasure.

How many an architect has looked at some beautiful but decayed and neglected specimen of our national church architecture and longed for the liberty to take it in hand, efface its defacements, restore its losses by time or violence, and make it what it was at its best, with the added charm of age and association; and how, *now and then*, may it fall to the lot of such a one to have that liberty. That is a legitimate instance of the romance of architecture; and when such noble specimens of Mediæval work as some of our cathedrals are placed in consciously competent hands for restoration, a sense of delight surely scarcely to be exceeded by any result of professional success may be fitly experienced, and the best energies of the artist devoted to produce thorough success; and thorough successes some of such restorations have proved, and as greatly do they redound to their authors' honour as the best original work, for not only must there be that thorough knowledge which a life is not too long to mature, but that veneration for the old men's work, and that self-abnegation in its presence, which are essential to prevent a restoration becoming a renovation.

The rising race of architects will not for generations to come have anything like the work of restoration to undertake which has so occupied the lately past and present ones. Let them, however, cherish heartily all the precious remains of our own country's architecture, and let them learn to imbibe its sentiment and emulate its simplicity and grace. It is full of the nameless charm to reproduce which is to write poetry in stone, and those who can bring it home to the feelings of others are our true poets in architecture. Cherish, too, the records

of still older art. None can, perhaps, lay hold of us like our home-born style, but all have their fitness and their arena of force; and so to deal with design in these as that the associations awakened by your work are those of which you are yourselves conscious in the exploration and loving study of "history in stone," is to impart to others what in such researches will reward your own pains,—another and a very fair experience of the Romance of Architecture.

NOTES.

MANY and various have been the lamentations during the past few weeks over the supposed impending fate of Staple Inn, and the proposals for its retention and utilisation; the last utterance being a broadside in quarto form from the Society for the Protection of Ancient Buildings, addressed to the Lord Mayor and Aldermen and Council of the City of London, and setting forth in many dolorous phrases the reasons for the preservation of Staple Inn, not omitting, as is their wont, to mention the snub their former communication on the subject received, in being ordered to "lie upon the table"; for, indeed, the Society is most conscientious in recording the fact that nobody pays any attention to its maunderings reminding one of Beatrice's rejoinder, "I wonder you will be still talking, Signor Benedick; nobody marks you." We are not given to any exaggerated mourning over old things merely because they are old, but endeavour to keep the balance duly between the claims of things new and old; and our conclusion, after walking about Staple Inn and "telling the towers thereof," is that the block facing Holborn, however picturesque (as it undoubtedly is), cannot possibly be allowed to occupy its present position many years longer; it is a rickety-looking structure, which is probably unhealthy, certainly dirty, probably dilapidated in structural condition, and we can see no use in trying to lengthen out its term of existence on sufferance for a few brief years. "It is a last bit of Old London": true enough, but Old London *must* go sooner or later; you cannot keep it for ever. But these remarks apply only to the front block; the return and back wings of the quadrangle are solid substantial buildings which, with some interior reforms, might be useful for many a year, and the quadrangle with its trees is a charming corner which it would be a thousand pities to demolish when the substantial condition of the building is considered. That is what we should do if we were privileged to buy Staple Inn: rebuild the block fronting the street in such a manner as to combine a quietly picturesque effect with modern requirements, and preserve the "quad." and the buildings surrounding its other three sides intact. And that is what we hope will be done.

THE reparation of the Saxon Chapel at Deerhurst is now completed. All the walls have been examined and made good, and everything has been removed which interfered with the building. A great quantity of soil has been taken away from the west side of the chapel, so that an ascent is made to it from the road which runs near the edifice on the west side. This will probably have the effect of preventing water from lying about the foundations in the wet time of the year. All the modern windows and doorways have been filled up, the entrance to the chapel being now effected through a restored Saxon archway. The nave has now two windows, high up on the north and south walls; one of these remains as it was first found; the other has been restored and made like its original companion. The roof or ceiling is flat, and shows the old and now blackened oak rafters, perhaps the original timber of the roof. Above them, the roof is modern. The chancel arch stands well. The half which (our readers will remember) had been cut away, has now been restored. Both the jambs were perfect, being composed of massive stone, as shown in the sketches we gave at the time of the discovery. The chancel walls had been taken down to the height of about 9 ft. from the pavement, to enable the sixteenth-century room to be built overhead. Acting on the advice of Professor Middleton, the Committee for the restoration caused a large "well-hole" to be cut in the flooring, so as to enable the chancel arch and other details to be seen, but the beams and much of the flooring have been left. A fixed ladder gives access to this flooring from below. The appearance of the building from the outside is that of an ancient chapel added on to a picturesque timbered house of the sixteenth century, and they are quite a pleasing group. The inscribed stone which was found used for a window-head during the exploration of the edifice will be removed and let into the inside of one of the walls, for the sake of security. A copy of the "Odda" stone at Oxford will also be set up in some convenient place.

IN the last number of the *Ἐφήμερις Ἀρχαιολογική* (1886, 3, plate 7), Dr. Staes publishes fragments of a vase of very early date, which, both from the circumstances of their finding and their subject, are of special interest. The fragments are three in number; one of them has for years lain in the museum of the Archæological Society at Athens. The two others have just been discovered in the recent excavations on the Acropolis. The three fragments fit together precisely in the most satisfactory manner. The subject is a Gigantomachia, and we think we are safe in saying it is the earliest representation of the scene as yet known. The fragments evidently formed part of a vessel of very large size; the style is early black figured, and each giant and god is inscribed. We have four groups of combatants, three of them nearly complete, the fourth much broken away. The first group represents Zeus and Herakles in the same chariot. The combination is novel. Behind the two is a woman's face and hand raised in supplication. There can be little doubt that she is the ancient prototype of the figure of Ge, the earth mother of the giants, which is so well known on the great Pergamene frieze. This is an interesting illustration of the extremely traditional character of Greek art. The other groups represent Hermes, Dionysos, and another god who cannot be made out, contending with inscribed giants. The names of the giants have not yet been satisfactorily established.

THE same number of the *Ἐφήμερις* gives a detailed account of some further results of the Acropolis excavations. It also devotes a plate to facsimiles of inscriptions found on architectural fragments. Several of these inscriptions run along the flutings of columns. Two of them we may note as of special importance because they contain the signatures of sculptors. Down the fluting of one Doric column runs *Ἐυήνωρ ἐπο [ἰησε]*, and in a parallel line *Κίρων ἀνέθ[ηκε]*." "Euenor made Kiron dedicated." This Euenor is known to us in this inscription for the first time, as from the form of the letters the Ephesian Euenor, the contemporary of Parrhasios, is out of the question. The second signature we would note is that of Antenor. A sculptor of the name of Antenor made the first portrait statues of the tyrant-slayers Harmodios and Aristogeiton about the time of the sixth and fifth centuries B.C. The statues, of course, have perished, but we know something of their style from copies. Now, we have the signature *Ἀντήνωρ ἐπ[οίησεν]* found on the Acropolis written in letters of early fifth century date, and we can scarcely be wrong in associating the signature with the Antenor of the Harmodios and Aristogeiton group. The paper also discusses in detail some of the bronze and terra-cotta figures recently found.

THE work and cost of the Manchester Corporation Health Department is the subject of a paper in the Transactions of the Manchester Statistical Society, session 1885–86. Mr. Henry Whiley, the author, has, unfortunately, limited the scope of his paper, remarking that all those whom he addressed were acquainted with the system of sanitation in practice in the city, and knew how the work was divided. Presuming on this acquaintance, he has given a large amount of instructive detail. It appears that 66,000 pail closets and 50,000 dust-bins are the receptacles of the refuse of which the Sanitary Committee disposes. This represents a population now amounting, for the City of Manchester alone, to 337,442. The total expenditure of the Health Committee, which in 1879-80 was 90,257*l.*, came to 87,473*l.* for the year 1884-85, which is at the rate of 5·19 shillings per head. This includes scavenging, as well as the disposal of night soil, but the former item, as well as we can make out, amounts to only about 21½ per cent. of the total cost. It is, however, worthy of note that out of this large expenditure only 450*l.* is paid for disinfectants. There is, indeed, an item of 3,912*l.* for "chemicals, excluding carbolic," but even if that applies to purifying purposes the proportionate amount is very small. We give figures, however, with some reserve; as the tabulated accounts of expenditure and income do not distinguish between capital and annual outlay, so that the reduction of any item per head is complicated. According to the data supplied in Mr. Silverthorne's "London and Provincial Water Supply," the cost of the water service of Manchester and thirty-three associated townships comes to 5·12 shillings per unit of population per annum, or substantially to the same amount as the cost of the removal of refuse of all kinds.

IT is instructive to compare the cost of the removal of night soil from a large unsewered town with that of the sewer system, where no expense is incurred for systematic disinfection. What we may regard as the capital outlay for Manchester we make out to be 255,000*l.*, which is about 15·1 shillings per individual. The cost of the main drainage of London to the end of 1885 was 6,518,699*l.*, or 32·58 shillings per head, for a population given at 4,000,000 by Sir J. W. Bazalgette in 1884. At the low rate of 3½ per cent. per annum this gives the cost for interest of 1·14s., to which has to be added the working cost of 7·38d., making in all 21·06d. per head for merely pouring the sewage into the Thames. It follows that the pail system is more than double as costly as what may be called the untreated water-borne system, and that there is a wide margin for the employment of disinfectants in each case, more especially if this can be rendered a means of diminishing rather than of increasing working cost. It should, however, be borne in mind that the London outlay regards the main drainage alone, and that the cost of the local portion of the vast system of London sewers not executed by the Metropolitan Board has to be compared with that portion of the cost of the Manchester system which does not come within the figures of the Board of Health, in order to arrive at an exact balance as to the cost in money of the two systems. As to the cost in the most important item, human life, the death-rate of Manchester for 1884 was 26·4 per 1,000, against 20·3 per 1,000 for London.

THE fourteenth section of the Gas Works Clauses Act, 1847, says:—"The undertakers may let for hire any meter for ascertaining the quantity of gas consumed or supplied, or any fittings for the gas . . . and such meters and fittings shall not be subject to distress . . . for rent of the premises where the same may be used." This Act is incorporated with the Metropolis Gas Act, 1860, and so forms an integral part of it. The Court of Appeal have recently had to decide if a gas-stove was a "fitting for gas." The process of reasoning by which their conclusion was arrived at is not very material. The important point is that a gas-stove is within the meaning of this term, and so is exempt from distress. Here is an exception to the general rule,—one introduced by the Legislature. The question, then, may fairly be asked, why a gas company should have greater privileges than other persons? If these goods are exempt from distress, so also ought to be all goods which do not belong to the indebted tenant.

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THE "extraordinary meeting" of the proprietors of the Didcot, Newbury, and Southampton Railway, on Friday last, proved to be extraordinary in more senses than one, and it is seldom that the action of the Directors of a railway company raises such a storm of opposition as was manifested at this meeting. The line is completed to Winchester, and the Directors consider that the best policy would be to join the existing London and South-Western line at that point, although the company have Parliamentary powers for proceeding independently to Southampton. It is alleged that a considerable amount of capital was subscribed at Southampton in anticipation of the latter scheme being carried out, and the abandoning of the independent line to that town is looked upon as akin to "scuttling the ship." The chairman and three-fourths of the directors advocate giving up the idea of a separate line from Winchester, on the grounds of want of capital, and the probability of the competition of the London and South-Western Railway rendering it unprofitable. The chairman stands in the invidious position of being also Chairman of the District Railway Company, which holds friendly relations with the London and South-Western Company, which fact has exposed him to the charge of being unable to do justice to the Didcot and Southampton undertaking; and a very stormy meeting ended without any vote of thanks being accorded to him for presiding. Of course it would be necessary to come to terms with the London and South-Western Railway for running powers, if the company's trains ran on their line from Winchester to Southampton, and it seems very unfortunate that the line was not promoted as the Didcot, Newbury, and Winchester Railway, if it was intended to stop at the latter place. As it is, the inhabitants of Southampton and other subscribers naturally expected a through independent line, and fail to see why the original authorised scheme should not be adhered to.

MR. J. ADAMS sends us a pamphlet on an ingenious method for making a sewer system flush itself by simultaneous automatic action. Repeating what we have already said, that the idea put forth by the Sanitary Committee of the Metropolitan Board of Works as to the possibility of combined action on the part of the householders to flush the sewers is utterly futile, he proposes to arrange a series of flushing-tanks with syphon overflows, the syphon action being ordinarily closed by the intervention of a double dip-trap below the discharge of the syphon pipe. A sealed air-pipe from each dip is connected with the axis of a tip-vessel, filled and tipped by the overflow water from the flushing-tanks as they are filled, the turnover of the tip-vessel releasing all the seals from the air-pipes simultaneously along the whole row of flushing-tanks, so that all the syphons are released and set going simultaneously, and a large discharge of sewage sent off into the sewer. The plugs of the air-pipes are all connected with the prolonged axis of the tip-vessel so as to be lifted simultaneously with its action, and returned when it returns to its normal position after emptying, when the process of gradually filling and overflowing of the flush-tanks is repeated. The ends of the air-pipes terminate each in a receptacle filled with water, covered by an inverted cup attached to the tipping-bucket. Whilst the cup is immersed in the water all air is confined within the traps and syphons, and is allowed to escape on the lifting of the cup by the turn of the bucket. The idea is very ingenious and seems practicable.

THE Journal of the American Association of Engineering Societies gives some particulars of the cements used in the district of St. Louis. Ninety-five per cent., it appears, is the Louisville cement, which is made from stone belonging to the Devonian formation, the properties of which were first noted in 1828 in the course of construction of the Louisville and Portland Canal. The cement derived from the upper stratum is quicker setting and darker than that derived from the lower, and it requires harder burning. The general condition stated in specifications for this cement is that it shall have a tensile strength of not less than 40 lb. per square inch when mixed pure, made into test bars, and exposed thirty minutes in air and twenty-four hours or more under water. A series of nearly 4,000 tests of the seven chief brands gave the following results:—

—	Exposed thirty minutes in air.			
	Twenty-four hours under water.	Two days under water.	Three days under water.	Fifty days under water.
	lb.	lb.	lb.	lb.
Highest tensile strength	168·0	160·0	100·0	202·0
Highest average tensile strength of any brand ...	92·7	96·8	88·0	164·3
Average of all brands tested	72·7	78·7	73·2	150·6

IT has been recently stated that the Conservators of the Thames have announced their intention of bringing in a Bill to enable them to raise the price for water supplied to the various companies above Kingston, viz., Lambeth, Chelsea, Grand Junction, West Middlesex, Southwark and Vauxhall. A year or two ago, these water payments were as follows:—Lambeth, 2,252*l.*; Chelsea, 2,300*l.*; Southwark and Vauxhall, 2,305*l.*; West Middlesex, 2,320*l.*; Grand Junction, 2,300*l.* We presume that the object of the conservators is to try, in some degree, how far a gentle pressure in the way of economy might be useful in limiting the intake of Thames water; partly, too, perhaps, from the idea that the water companies should not be allowed to make such high profits in these days of general depression. The real difficulty, however, will come when it is recognised that more water is daily taken from the river than its diminishing volume can afford.

THE London and North-Western Railway Company have lately completed a very large station at Rugby; it would be well if the Directors would turn their attention towards the metropolis and improve Willesden Junction. The part of the station for the high-level service is unworthy of the worst-paying branch in the provinces. It is difficult of access, small, without proper waiting-rooms, and altogether inadequate for the purposes of the traffic. The low-level trains for Croydon and Victoria usually start from a siding much exposed to the rain and wind. The connexion also between the different parts of the station is difficult and inconvenient. Willesden is not only the centre of much local traffic, but one of the most important junctions on the southern part of the North-Western system, and it is astonishing that the Directors have so long neglected to remedy its manifest and numerous shortcomings.

THE new Hofburg Theatre, now being erected at Vienna, to hold 2,000 persons, will be one of the most perfect in existence as regards arrangements for the safety of the audience. A *foyer*, 30 ft. in width, runs round the house on every floor, and on each are twenty-four doors, opening on to wide staircases, so that there can be no possible block in case of a sudden alarm. There is very little wood in the whole of the construction, and what there is has been rendered incombustible by chemical preparation. The staircases are all of stone, the girders of iron, and the ornamental work of marble or enamel. What is of more importance, the stage is cut off from the body of the house by a strong and thick wall of brick and iron, while an iron curtain can be let down in two minutes, thus effectually confining the fire to the stage while the house is being emptied. It will be remembered that when the theatre was burned down with such a lamentable loss of life, it was found impossible to lower the curtain sufficiently rapidly. In other matters the new theatre has some remarkable peculiarities, one being that from its situation, over what was once the moat of the old fortifications, there is an immense amount of spare room, which is utilised to make ready all the set scenes, and do away with every kind of work on the stage or slips. Behind, the arrangements are equally perfect, every individual actor being accommodated with a separate dressing-room, while even the supers. are carefully kept from being overcrowded. No light but electricity is used. Baron Hasenauer is the architect, and he may deservedly claim credit for having inaugurated a new era in theatre building.

THE *Times* Brussels correspondent mentions that in the new Belgian Parliament Hall the seats are arranged with a lifting spring, so that when a member rises to speak his seat rises automatically and falls back against the back partition, so as to leave him much more room for standing and moving during his speech. This is ingenious and no doubt advantageous as far as it goes, but the same automatic movement cannot be applied to cause the seat to descend when the speaker prepares to sit down, and it would have a rather awkward and unhappy effect if a new speaker, not yet used to the peculiarities of the house, were to "resume his seat" by disappearing into the vacant space left by the automatically folding seat,—a catastrophe which we should certainly expect would happen one day.

IT may be presumed that those who wish for the establishment of a "Church House" know best what they want, but we cannot help adding our support to the idea, promulgated in some part of the correspondence which has taken place on the subject, of endeavouring to acquire the old Charter House for the purpose. The building would probably be fairly adapted or adaptable for the purpose in a practical sense, and a very suitable use would thus be found for a most interesting and valuable remnant of the architecture of the past, the demolition of which has been already threatened.

WE should like to draw the attention of architects and draughtsmen who may be temporarily concerned about the drawings of buildings for illustration in our pages to a very simple matter, which, nevertheless, we find it very difficult to get attended to. Plans for publication, except in the case of very large and elaborate buildings, are usually produced on our pages on a small scale, either as blocks in the text, or in a corner of a lithograph view. The plans not being required to work from, this is usually sufficient to show all their features and arrangement for illustrative purposes. But it is necessary in such a case that, in the tracing made for publication, the names should be written proportionately larger to allow for reduction. This seems a very simple and obvious matter: the width of our page is a visible quantity, capable of measurement by one of the standard measures of the realm, and when a plan four times the width of the page is traced for publication, it would seem obvious that the writing must be four times the usual size, to appear readable when reduced. We always call special attention to this in correspondence about illustrations, but it is a curious fact that not one draughtsman in twenty can be got to see it. Not infrequently we are obliged to have the whole plan traced again, or all the names cut out and re-written, to render a plan that has been specially traced for the purpose available for publication. Surely an architectural draughtsman ought to be equal to such a simple problem as this.

United Arts Club.—The first general meeting, held on Wednesday evening at the St. James's-place Hotel, was, notwithstanding the wet weather, very well attended. Mr. E. I'Anson, P.R.I.B.A., was supported by Professor Kerr, Mr. H. L. Florence, Mr. W. Young, Mr. J. M. Brydon, Mr. E. Hayes, and others. Letters were read from Sir Douglas Fox, Messrs. Wolfe Barry, Banister Fletcher, Charles Cooke, and others. A committee, with power to add to their number, was then formed for the first six months, Mr. E. I'Anson and Professor Kerr being hon. members of same. The club was then formed under the title of "The United Arts Club."

MONT ST. MICHEL.

We give this week a view copied from M. Corroyer's drawing for the restoration of the church and fortress on Mont St. Michel, accompanied by a view representing the actual condition of the mount and its buildings.

Of the many historical monuments scattered all over France none are more remarkable than the Church and Abbey of Mont St. Michel, erected on the summit of a steep and conical-shaped rock, formed of granite, about 9,000 mètres in circumference, and rising majestically to the height of 140 ft. in the middle of an immense estuary.

The Mount received its name at the beginning of the eighth century. No traces of any construction have ever been found dating further back than the eleventh century. Dom Jean Huynes, however, in his "*Histoire Générale de l'Abbaye du Mont St. Michel au Péril de la Mer, Diocèse d'Avranches, Province de Normandie*," speaks of an old tradition which attributes the erection of a church to St. Aubert at the commencement of the eighth century. After the consecration of the chapel (16th October, 709) St. Aubert founded the abbey, selecting twelve canons or prebendaries, who were employed to celebrate divine service, &c., granting them for their maintenance the revenues derived from the villages of Huynes and Genest. No supply of fresh water could, however, be found, and in order to obtain this St. Aubert and his companions continually offered up prayers imploring the intercession of St. Michael to discover for them and their successors a source of fresh water, when the Archangel appeared and pointed out to the saint a spring at the foot of the mountain in the rock itself. It was afterwards called St. Aubert's well. The news of the apparition of St. Michael soon spread far and wide, pilgrimages were organised, and the abbey was greatly enriched by many valuable gifts from the Pope, the King of France, and other notabilities. Up to the close of the ninth century it increased in fame and celebrity, and began to be known as the Mont St. Michel. After the death of Charlemagne the Normans invested his dismembered empire, and under the redoubtable Rollon laid waste the whole of the western portion of Normandy. In 966 the grandson of that warrior, Richard the Fearless, installed the Benedictine monks on the rock, and his son Richard II., Duke of Normandy, founded in 1020 the church, of which now only a few vestiges remain. Commenced in the above year by the fourth abbot, Hildebert II., it was finished by Bernard, the monk, in 1135, and consisted of a choir, transepts, and a nave, with seven bays; in the façade, looking west, were three doors, above the principal one a large window lighted up the central aisle. The town at this period consisted of but one long, narrow, winding precipitous street. Under the next abbot, Robert de Torigni (1154-1186), the monastery was considerably enlarged; literature, science, and art there found a home, but all this peace and prosperity was rudely interrupted when in 1203 Guy de Thonars, foiled in his attempt to seize the place, set fire to the town, and only the church, and the walls and roofs of the abbey, remained intact. The successors of Robert de Torigni repaired the church and the monastery, and designed and erected "La Merveille." This noble structure was commenced about 1203-4 by Jourdain, seventeenth abbot, and, thanks to the liberality of Philip Augustus, was continued without interruption until its completion in 1228. As a specimen of religious and military architecture it is unique in its kind. It is formed of two contiguous buildings united, and contains three stories,—the lower one comprising the almonry and the store-rooms; the intermediate one, the refectory and the salle de chevaliers, and the upper one another refectory and the cloisters.

When it is remembered that these buildings are constructed entirely of granite, on the flank of a precipitous rock, separated from the main land by shifting and dangerous sands, and that across these the material had to be transported from the quarries on the opposite coast, one cannot but admire and wonder at the daring conception of the architects, and the indomitable courage and energy of the men who, during a period of twenty-five years, never flagged in their task. The almonry is composed of two aisles with strong, thick columns, the capitals and bases being square; the store-room has three aisles supported by square columns.

The Salle de Chevaliers, which in 1848 was turned into a prison for criminals and political offenders, was commenced in 1215 by Raoul des Isles, and finished by Thomas des Chambres about 1220, and only received its name after the institution of the order of St. Michael, founded by Louis XI., 1469. The Salle is composed of four vaulted aisles of unequal width, supported by three rows of pillars; the two first, on the north side, rest upon the piers of the store-room, while the third is built upon the rock; a large bay-window looking west, and others of various form facing the north, light up the hall, which, from its construction, was evidently intended for large meetings. A door in the south-east angle of the wall leads to the refectory, which is composed of a double aisle lighted by nine lofty windows. The cloister, one of the most curious, as well as one of the most perfect which France possesses, and a gem of Gothic architecture, was commenced by Thomas des Chambres, and finished by Raoul de Villedieu in 1228; its form is an irregular quadrilateral, with four galleries surrounding the courtyard, and a double row of pointed arches resting on thin granite columns. The spandrels of the arches are filled in with exquisitely sculptured flowers and foliage, each different in design. The cloisters have been completely restored since 1881, under the direction of M. Corroyer, the Government architect charged with the work of the entire restoration of the whole monument. We may here observe that the granite-like stone of which the cloisters are built was kindly given by the present owner of the quarries, M. le Comte Henry de Canisy, thus following the example of the ancient owners of the mine, the abbots of the Abbey de la Luzerne, who, in the thirteenth century made presents of it to the Benedictine monks of Mont St. Michel.

As a fortress it is almost impregnable, and was the only one which held out for the French king when the whole of Normandy was invested by the armies of the victor of Agincourt, who laid siege to the place, but without result; and in the last attack, 1434, they were completely routed by the garrison and the chevaliers (heroes of the psalter and the sword), under the leadership of the stout-hearted Louis d'Estouteville; two mortars, abandoned by them, are still to be seen, telling the story of their failure. For many centuries the shrine of St. Michael was visited yearly by thousands, but the Revolution of 1789 dispersed the monks, and the building was turned into a prison in which 300 priests were incarcerated and left there until death released them. In 1834 a fire (the thirteenth since its foundation) caused very serious damage to the buildings, which were repaired by simply plastering up the walls and columns with a mortar or cement finished with a granite-like surface, and making, with the same material, fanciful capitals bearing not the slightest resemblance to the originals. Years of neglect began to tell their tale upon the crumbling masonry, the tottering columns, and weather-beaten walls, and the grand old monument, after stoutly withstanding the besiegers' cannon and the storms of centuries, would have become a pile of ruins, had not M. Corroyer eloquently pleaded its cause, calling the attention of the Government to its dilapidated condition.

In 1872, at the request of the Minister of Public Instruction of Fine Arts, M. Corroyer submitted plans for its restoration which were accepted, and in 1873 the work was commenced under his superintendence; M. Louvel, architect, Inspector of Historical Monuments Works, directing, and M. T. Fouché, Government builder, executing the work. Unfortunately, the undertaking was suddenly interrupted by the raising of a heap of rubbish against the ramparts notwithstanding loud and legitimate protestations. This work, carried out by main force, which has been styled a dyke or dam, has already proved an element of destruction, for in 1881 the interior wall of the ramparts fell, large cracks and fissures were observed in the king's tower, and other portions were greatly damaged. Some drawings exhibited by M. Corroyer in the *Salon* of 1883 (architectural section) executed with the most scrupulous exactitude, illustrate the ramparts as they existed in 1879, and their condition in 1883, showing the damage caused by this so-called dyke, which it is to be hoped will before long be removed.

For much of the historical information here given we are indebted to the remarkable work by M. Corroyer entitled "Description de l'Abbaye du Mont St. Michel et de ses Abords, précédée d'une Notice historique," a work for which its author received the academical honours of the Institute of France.

THE ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD.

The Fifteenth Annual Report of the Local Government Board,* just issued, contains, as usual, a great array of statistics and facts relating to the pauperism, rating, and sanitary condition of the country. We must pass lightly over the two subjects first named, merely noting, for what it may be worth in point of signification at the present moment, that during the parochial year 1884-85 (which ended at Lady Day, 1885), the mean number of paupers of all classes was smaller, in proportion to the population, than in any previous parochial year for which statistics of pauperism exist. It amounted to a thirty-fifth part of the estimated population. The mean number of adult able-bodied paupers bore the same proportion to the estimated population as in the preceding year. It amounted to 3·5 per 1,000, or 1 in every 283. The cost of poor relief, during the same period, amounted to 8,491,600*l*., which was 89,047*l*. more than in the preceding year. This expenditure represented an average charge of 6s. 3d. per head on the estimated population, being one farthing per head less than in the parochial year, 1883-84, and an average rate of 1s. 2d. in the pound on the rateable value of the property liable to contribute to the poor-rate. In only five of the past twenty years has the average charge per head of the expenditure been less, and in every previous year for which there are statistics the average rate in the pound on the rateable value has been higher. The rateable value of the property liable to contribute to the Poor Rate was 145,527,944*l*.

The second section of the Report relates to "Local Government and Public Health," and covers a wide field of operations. We learn that the total amount of the loans which were sanctioned by the General Board of Health under the Public Health Act, 1848, up to the 1st of September, 1858, when the Local Government Act, 1858, came into force, was 2,956,178*l*. The sanctions granted by the Secretary of State under the latter Act, and the Sewage Utilisation Act, 1865, prior to the 19th of August, 1871, amounted to 7,363,366*l*. Since its constitution on the 19th of August, 1871, the Local Government Board has sanctioned the borrowing, by urban and rural sanitary authorities, of sums amounting in the aggregate to 34,403,473*l*. By far the greater proportion of these sums has been sanctioned for the purpose of sanitary improvements in urban districts, to be executed under the provisions of the Sanitary Acts, the Public Health Act, 1875, and Local and Provisional Orders. The remainder has been sanctioned principally for the execution of sanitary improvements in rural districts or for improvement schemes in urban districts under the Artisans and Labourers' Dwellings Improvement Act, 1875.

During the year covered by the Report, the Board caused to be prepared and submitted to Parliament during the Session, 104 reports and 9 supplemental reports on Bills promoted by local authorities, water companies, railway companies, and others, dealing with matters within the jurisdiction of the Board. The increase in the number of Bills thus reported upon, as compared with former years, was mainly due to the fact that in very many instances the Board had occasion to draw the attention of Parliament to the omission, on the part of the promoters, to insert satisfactory provisions prohibiting the purchase or acquisition, either compulsorily or by agreement, of houses occupied wholly or partially by persons belonging to the labouring classes as tenants or lodgers, except on the conditions prescribed by the new Standing Orders.† This being the first year in which provisions of this character were required to be inserted in private Bills, the details of the clauses embodying them needed careful consideration, and the Board found it necessary to make a considerable number of recommendations to Parliament, not only with a view to facilitate the carrying out

* London: Hansard & Son.

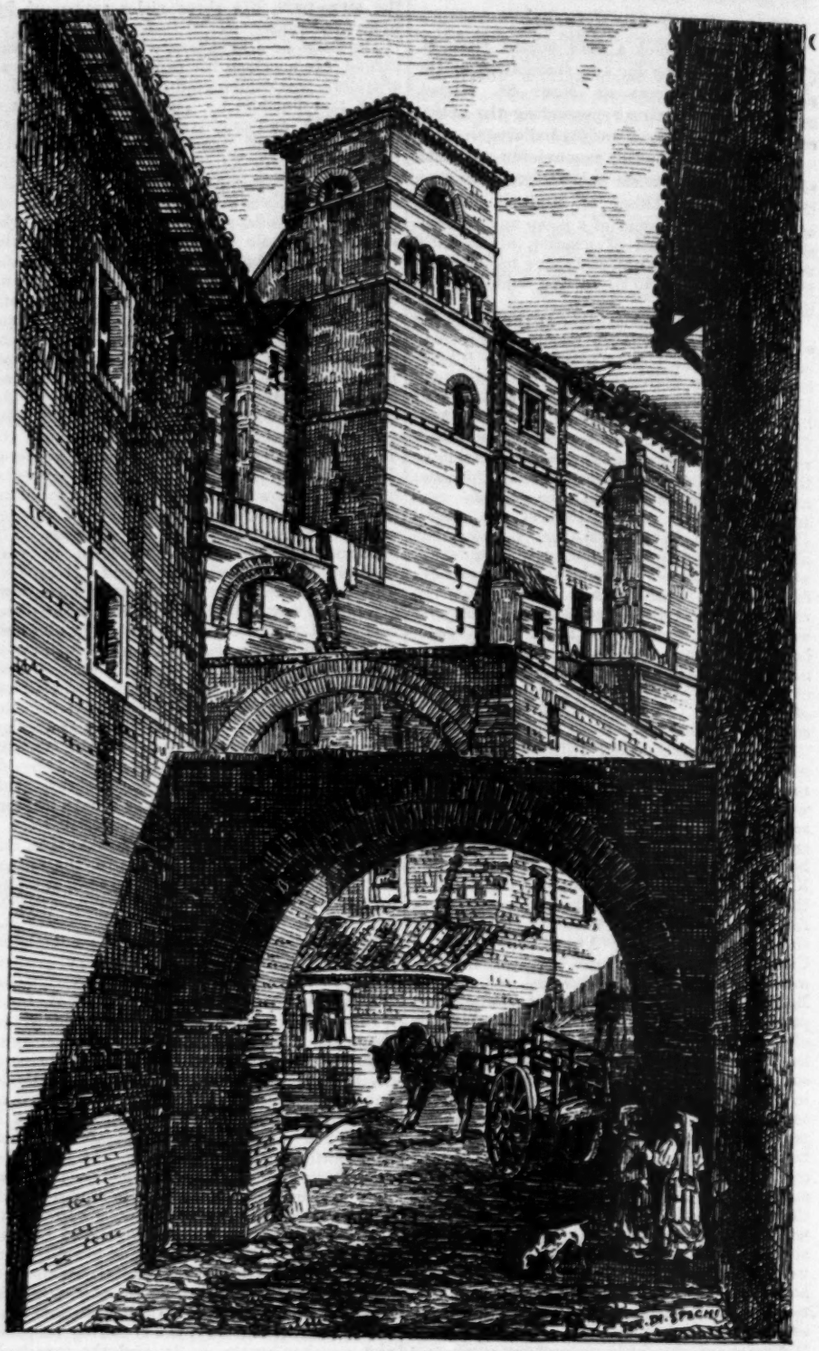
† No. 111, House of Lords; and No. 183A, House of Commons.

of proper schemes for providing new dwellings for the working classes in the place of those taken by the promoters, but also for the purpose of placing the Board in a position to require such schemes to be carried out, and to recover substantial penalties in the event of any default in this respect on the part of the promoters. By far the greater number of these recommendations were accepted by Parliament, and the clauses which were thus amended in accordance with the Board's recommendations, will it is believed, afford useful precedents in future years.

In nine of the Bills promoted by local authorities, and reported on by the Board, it was proposed to confer on the promoters powers relating to police or sanitary regulations which deviated from or were in extension of or repugnant to the general law. These Bills, in accordance with the course adopted in former years, were referred to a Select Committee of the House of Commons, who presented a special report to the House, dealing generally with the subject-matter of the Bills referred to them, and making various suggestions. In the course of their report they stated that, "continuing the practice of the Committees appointed to deal with similar Bills in 1882 and 1884, they had, to the best of their ability, enforced two leading principles, which they believed to be accepted by the House, viz.:—(1) That no local powers should be given in excess of the general law, unless there can be shown either (*a*) strong local reasons for such powers, or (*b*) general reasons so strong as to render desirable the preparation of clauses, which (pending public legislation) may be granted to every community that shall think fit to apply for them; and (2) That as a general rule, no statutory enactments should be permitted for purposes which can be effected by by-laws." As regards the latter principle, the Committee point out "that by-laws, as compared with statutory enactments, have these advantages: they are more easily and cheaply obtained; they are under direct supervision of the Local Government Board; and they can be more readily amended." On the question of finance, the Committee reported that although unreasonable periods have not, in most instances, been proposed for the repayment of borrowed money, they "have, where it seemed to them practicable, still further reduced these periods, believing it to be the desire of the House that municipal improvements of a transitory character should be paid for by the generation which makes them, and that even when they assume a more permanent character they should be defrayed in periods not exceeding, at the utmost, sixty years, which the Committee think might reasonably be reduced still further."

The action of the Local Government Board and its officers in regard to such questions as come under the Rivers Pollution Prevention Act, 1876, the Artisans and Labourers' Dwellings Acts, and kindred Acts, are detailed at some length in the Board's Report, which is accompanied by a number of appendices and tables which elucidate the work of the Board in its multifarious details. Among the most interesting of these appendices are the reports of Mr. John Brydone, the Inspector under the Canal Boats Act; of Miss Mason on "the boarding-out of pauper children"; and of Colonel Sir Francis Bolton on the Metropolitan Water Supply. In regard to the latter subject, the report of the Water Analyst, Professor Frankland, seems to show that the water both of the Thames and Lea was throughout the summer of 1885 exceptionally free from organic matter. The system of constant service is being steadily extended, and now applies to half the houses supplied by the eight companies. Several of the companies have also greatly improved the character of their works, the result being increased capacity and efficiency. Appendix F gives particulars of expenditure incurred during the year in respect of the purchase, erection, or enlargement, &c., of workhouses, district asylums and district schools connected with Poor Law Administration. The total amount so expended during the year was 420,284*l.*, a large proportion of which sum was expended in bricks and mortar.

A Proposal has been made for the erection of a building for a Free Library and School of Science and Art at Poole, in celebration of the Queen's Jubilee.



Torre di Specchi, Rome.—From "Picturesque Sketches in Italy."

PICTURESQUE SKETCHES IN ITALY.

UNDER this title we have a volume of sketches by Mr. Daniel Brade* of various ancient buildings in Italy, some of them which have not been much sketched. Some also which are very familiar are taken from unusual points of view. Others are interesting as records of buildings which have been removed. We give by permission a reproduction of one of the sketches which has this latter kind of interest, showing part of an old building, recently a nunnery, but now mainly pulled down. The sketches are intended, the author says, in a short preface, to convey the pictorial rather than the architectural interest of the buildings sketched; and, indeed, from an architect's point of view, the style of the drawings is somewhat deficient occasionally in clearness of definition. There is a free style and much artistic feeling in many of the sketches, however, and the book, both in regard to the execution of the drawings and the selection of the subjects, has a character of its own.

* Picturesque Sketches in Italy. By Daniel Brade, F.R.I.B.A. London: B. T. Batsford. 1886.

PUPILAGE.

AT the meeting of the Architectural Association on the 5th inst., Mr. Aston Webb, F.R.I.B.A., read a paper on "Pupilage." In the course of his prefatory remarks, he said that he should avoid the great subject of architectural education, as that was being at present dealt with by an Institute Committee. Neither should he discuss the conduct and duties of the masters towards their pupils, although he should inevitably have to refer to this subject, which was more a matter for discussion at the Institute, and he was not prepared to say that it might not be discussed there with considerable advantage. His object was merely to consider,—(1) The relations of masters and their pupils, and the terms under which pupils are articled; and (2) The disadvantages under which pupils, under the present system, labour. and the best way out of hem. He continued,—

I am afraid I must take it as certain that in many cases the relations of master and pupils are rather strained, owing, perhaps, to a misunderstanding of the relative duties of each, and we should naturally turn in

the first place to the form of articles to learn what the respective obligations are. Personally I was never bound by formal indentures, neither have I ever had, up to the present time, a young man formally bound to me. I dislike the idea, and prefer an annual arrangement, which can be terminated without trouble simply by the wish of either party. In such arrangements it is merely an understanding that a young man enters an architect's office with a view of participating in the work, and by the assistance of his master acquiring a knowledge or the practical working of his profession. This puts a master under as strong a moral obligation to do what he can to forward his pupil's interests as the strictest indentures, and is, to my thinking, more consistent with the feeling that should exist between master and pupil. However, we must naturally turn to the stricter indentures to find what is legally understood by a young man being articled to an architect. I have had several copies of these indentures lent to me by friends, and a perusal of them seems at once to carry one back almost to Mediæval times, as much from the quaintness of their requirements as for that of their diction. A good deal is said of what the pupil is to do, but not so much of the master. These seem to be some of the obligations laid on "the said" pupil:—

"That he shall and will during the said term of years faithfully, dilligently, and honestly, and to the best of his power, skill, and activity, give him the said architect as a pupil in the said profession, art, or calling of an architect, and that the said pupil shall not at any time during the said term wilfully obliterate, injure, spoil, damage, waste, destroy, misspend or misappropriate any of the property, money, instruments, utensils, goods, or chattels of him, the said architect, and further that the said pupil will at all times keep the secrets of the said architect, and will at all times during the term readily and cheerfully obey and execute his lawful and reasonable commands, and shall at all times conduct himself with all due propriety, honesty, and diligence."

"Also, that the pupil will provide himself with all manner of necessaries, with becoming apparel, and also physic and surgery in case of illness;" to which curious programme is sometimes added that "he shall not play at cards, dice, tables, or other unlawful games; that he shall not contract matrimony within the said term;" or commit other crimes too serious to mention. After which formidable programme comes a paragraph to say that "the architect, his administrators, and assigns [what the latter know of architecture I do not know] will [probably for a certain consideration] at all times during the said term of years teach and instruct the said pupil or cause to be taught and instructed in the art, profession, or calling [always great difficulty apparently in deciding what it is] of an architect in such sort as the same is or hereafter may be carried on by him, the said architect, to the best of his knowledge, skill, and ability." Well, now, the terms of such an agreement are apparently so strict and impossible to be absolutely kept on either side that probably both break through them in less than a month. I mention them to remind those here who are pupils of the extent of the obligations imposed upon them. But I purposely omitted in this account of indentures the time for which a pupil was articled. Fifty years ago this was usually seven years; then it was reduced to five years, and since then has been further reduced in many instances to three years. This is a detail of importance. Now, putting aside all Mediæval or other verbiage, what is the meaning of these articles? Very roughly put I believe the understanding is that a young man goes into an architect's office to learn how a practice is carried on, it being an obligation on the architect's part to give all the facilities he can to a pupil to learn it both in the office and out of it. He does *not* undertake the post of a schoolmaster, as some seem to suppose, and probably most young men at seventeen or eighteen would resent being so treated. He rather assumes that a young man at that age is not too young to understand that he is there to learn, not to play, though I am bound to say some seem to think that if they only attend an Academy or Association class in the evening they can spend their pupilage time much as they please. Possibly in many offices they can do so; but surely they should remember the all-importance of these pupilage years to themselves. You can comprehend that these years of pupilage are fraught with momenteus consequences to yourselves. Even three years wasted and dawdled away, as they often are at the commencement of a career, means to many a life wasted and dawdled away. Three years of good work means love of work and business habits acquired. Perhaps you say, "This merely applies to architecture as a business; I follow it as an art." I reply, that possibly if you let your art entirely master the business of your profession you may find hereafter the business entirely swallow up your art.

Architecture is the one art which combines the necessity for art and business capacity, and the greatest names in the architectural roll of fame are those who have most thoroughly combined them.

Some have made a name for their art capacity *only*; hundreds have made a practice from their business capacity *chiefly*; but the greatest have been able to build great buildings by their genius in uniting the two; and architecture is the art of erecting beautiful and useful buildings, not only of designing them.

Well, then, taking it you agree with me that a pupil should not expect to be taught in an architect's office as if he were at school, let us consider what he has a right to expect. It is evident that in a term of three years he cannot expect to acquire a thorough knowledge of his profession, or even as much as he did in a term of seven years; but I think he has a right to expect that he should have free access to all that goes on in the office; and that, further, his master should give him such instruction as he can, and should, in all cases, advise him in the course he should take in obtaining further knowledge unobtainable in an office from such classes and lectures as are provided at the Royal Academy, Royal Institute of British Architects, King's and University Colleges, and last, but not least, the Architectural Association; that he should be expected to give them one or two hours' personal instruction every day appears to me absolutely impracticable for an architect in active practice, however desirable it might be.

Before going to my second point let me say a word as to the relation between master and pupil. This should be one of mutual confidence and respect. The latter has the free run of the office of the former, and can, if he pleases, become intimately acquainted with all the details of his master's business. The pupil sees his master at work, and, perhaps, finds he is not infallible, and as it is said no man is a hero to his own valet, perhaps the same may be said of a master and pupil, though the pupil should remember that Carlyle suggested this *might* be the fault of the valet. On the other hand, though the architect must not be considered as a schoolmaster, the pupil has an undoubted right to look to him for advice and help in all matters connected with his architectural education, and to expect that he should put him in the way of acquiring a special technical education which can be far better learned outside than inside the office. The great advantage of the office training is that a pupil has the opportunity of seeing how work is actually performed, and how an architect, with his clients, builders, and others connected with the building trades, conducts his business in real life, and none of these matters can a young architect afford to neglect. On the other hand, if he is a wise young fellow he will endeavour to gain as much information from the office as he can on his own account without expecting his master, should he be in full practice, to be constantly especially instructing him.

Mr. Blashill read a paper on this subject before the Association ten years ago, and in that he expressed an opinion that pupils should be allowed to read all the office correspondence. This is a detail that was somewhat contested at the time, though I think there can be no question they should be enabled to do so.

I next come to the disadvantages or grievances which one hears most frequently from articled pupils and the best way out of them. Now, I have talked with a great many pupils, and these are some of the most general that I hear.

First and foremost of all, that they have too much tracing to do, or that there are too many pupils in the office, and not enough draughtsmen; or that (if they are in a London office) they do too much office work and do not go on buildings enough; or that (if they are in the country) *vice versâ*; or, that their master has too much work to do and cannot teach them; or, that their master has no work to do and cannot teach them; or, that the work is all of one class; or, that it was all surveying and specifications; or, that they never see any surveying or specifications; and many more such like.

Well, I agree with you that these are to some extent grievances and should be ventilated, and I should hope in time will be ameliorated, but they will not be in your time; and what I want to do, if I can, is to suggest some ways by which you can help yourselves to get over these difficulties. No sensible man can doubt that there are many cases in which a pupil has every reason to complain, or that others complain without any just reason.

It is difficult, for instance, to sympathise with those who complain that they are in so large an office with a great deal of work and so many to do it that there is no opportunity for them, while it is very easy to sympathise with those who find themselves in an office where their master is much employed out of it, and where the principal work is copying specifications and schedules of dilapidations, and their sole companion an office boy, while the tedium of the long days in the little elevated office is only relieved by the occasional tramp in the creaking stairs of the inevitable cadger.

Now, to take the grievances in detail: the first is tracing, and I say at once I think pupils often have too much of this to do. On the other hand, it is undoubtedly one of the best means by which a pupil can get into the habit of architectural drawing. Some acquire it very quickly, others take years before they can trace properly; some learn while they trace, all could if they would by thinking about it. It also gets a pupil into the way of delineating work and placing it on the paper in an intelligible manner, which he would probably not otherwise learn, and if all these sources of satisfaction should fail him, then is the one left experienced by Carlyle in "honest journey-work well done for want of better." Mr. Christian, I think it was, told a story here once of a pupil who came to him and mentioned, amongst other things, that if he was articled he should like to do nothing derogatory to a gentleman; and being asked to explain, said he should not like to do anything which he could not do with his gloves on, and I believe it was added that this young gentleman came to no good. Of course you cannot trace with gloves on, and you will have to take them off, and your coat too, if you are going to study architecture thoroughly, and not be too squeamish at the work that is set you either. The next grievance was that there were too many pupils in the office, and there again I agree to some extent. I know some architects who think it would be beneficial to limit the number of pupils to be taken by an architect to two, as is already done in the law, and though this might be well in the majority of cases, we all know some offices where it is eminently to the advantage of architecture that the largest number of pupils should be trained that the master is willing to instruct. It would be invidious to mention them, but you know them without it.

Then, again, those who are in London offices complain that they see little of executed work, and no doubt much of the work designed in many London offices is executed in the country; and where this is so I would say to the pupil, avail yourself to the full of the Architectural Association Saturday afternoon visits, and the numerous opportunities there are always open in London to inspect works in progress. Surely, of all places in the world, London is the place where this complaint should not be made, while the immense advance lately made in the work carried out in the offices out of London, shows that here also, if a pupil is so minded, he may see good work and improve himself by it. With respect to the grievance that one master has too much to do and another too little, it should be remembered that while in the first case a pupil must have the opportunity of seeing much work go through the office, in the other he will probably have the advantage of more personal attention from his master, and it is practically impossible to have it both ways.

I should now like to show how, in my opinion, a pupil may make the best use of his opportunities in whatever office he may happen to be; that is to say, how he can best learn an architect's business, without which he will never be able to develope or exercise whatever power of design he may be possessed of.

The first year of his pupilage he should have some personal instructions from his master, and take part in whatever subordinate work in the office he may be set to; taking all the time as much interest as he can in the business that is going on. In the second year he should join

the Association, and do other work outside, which it is not my province to-night to describe. Then he should start what I would call a commonplace book; in other words, an illustrated note-book, in which he should put down the leading points of drawings passing through the office, and especially those coming under his immediate notice to ink in, finish off, or trace. All points of construction, scantlings of roofs, and such varied items as dimensions of a stable, details of a church, school seating, sanitary traps, or whatever it may be, should be carefully noted down and arranged for easy reference, and if he steadily did this during his pupilage he would amass an amount of practical information that would prove to be of inestimable advantage to him afterwards, and if this paper of mine to-night is but the cause of a few of you starting such a book it will not have been thrown away; and, while on the subject of this commonplace book, I would suggest to those who complain of the want of variety of work in the office they are in that they might easily arrange with others to exchange information with those in other offices, and thus add to their own stock of knowledge and that of others at the same time; and though this presupposes a very considerable amount of interest on the part of pupils, it is surely not too much to expect. I do not believe there is a master in London who would grudge his pupil the time to do this if he found he was doing it thoroughly, but if he did I should feel almost justified in giving you the somewhat dangerous advice given by a statesman to Ulster a short time ago when he said that if certain circumstances arose "Ulster would fight and Ulster would be right."

Then, as to specifications and contracts: some pupils at the end of their articles are perfectly innocent of these things, but if they have never taken the trouble to copy those that are always in use in the office they must not lay all the blame on their master. They are in the office for the purpose of seeing these instruments in actual use, and I would recommend this as an admirable exercise to any young man who would take the trouble, viz., to take a set of contract drawings in the office and write a specification from them without help, and afterwards compare it with the working office copy.

Again, you should occasionally take your own cube of buildings being erected in the office, and find out their cost and note it in the commonplace book at per foot cube; but I have said enough to show you what I am driving at, viz., that it is to the advantage of every pupil to take an intelligent interest in the work going through the office, and that not merely in the interest of his master, but for his own sake.

Another point which is somewhat outside, perhaps, the regular office work, but for which, I think, opportunities should be given, is architectural sketching. I am sure it is possible to collect a large number of sketches in so lazy a way that they are practically no good to the student. Water-colour sketching, for instance, is a delightful relaxation, but is of comparatively little value for the purpose of study.

I believe that nothing would help the student more than the habit of sketching from memory, both old examples and new. There is no greater test of how far you have really understood anything you have sketched than by trying when you get home to redraw it without reference to your sketch-book.

You will be surprised at first how little you remember, and afterwards how the practice strengthens your memory. If any of the pupils I am speaking to would try when they get home to sketch a bay of any building they know well they will be surprised, I fancy, to find how little they really know about it. The same practice is equally useful in respect of modern buildings, and if you select any fairly good building you pass on the way to your office, look at it carefully, and try to draw it from memory, returning time after time until you have it complete, and then another, and so on, you will not find the time spent thrown away.

The advantage to be derived by friendships formed with those articled in other offices is obvious for the purpose of the exchange of information such as I have already referred to, and this Association presents the opportunity of forming these friendships, which, made now, will probably lead to some of the pleasantest hours in your professional life. The friendly rivalry excited by the competition for prizes here and elsewhere is, I believe, carried on with an entire absence of that bitterness not altogether unknown to those who have entered on the real struggle of life.

Another question every pupil should consider, and which he should pre-eminently expect advice upon from his master, is the books he should read. Now, this might form a subject for a paper alone, and I can only touch upon it to-night, though every pupil should make up his mind to do a certain amount of systematic reading during his pupilage. I am inclined to think a pupil's reading should be unfettered with any idea of an examination, and must, of course, be regulated to some extent by the books he can get. The office library should be ransacked, while the libraries here, in the Institute, and South Kensington Museum enable a London student to consult any books he wants.

There are two books no pupil should be without as his own property. These are Fergusson's "Handbook" and Gwilt's "Encyclopædia." Their price is moderate and must be within the reach of all. Of course it is necessary not only to have them, but to read them. On this subject of books I do not think I can do better than refer you to the little pamphlet of advice published by the Institute. This suggests the best books under the various subjects, and though it has been somewhat found fault with as giving an impossible list of books, if you will read it carefully you will find it is not so. A pretty complete list is very properly given, but those *essential* are also first pointed out.

A habit of steady, continuous reading is not an easy thing to acquire, but it is worth the effort and must be made, and, like other things worth striving for, when acquired brings its own reward.

No pupil should neglect to consult the committee of advice started by this Association if he is in any difficulty and is unable to get help from his master.

One word to those pupils whose articles are just expiring. This is, perhaps, the most difficult time of all to a young man. He has views of taking an office, and perhaps chambers in town, and setting up a door-plate, &c. If he has only served for three years he should do nothing of the kind, but rather remain in the office where he was articled, or enter another as a salaried assistant, and in his spare time read up for the Institute Examination, and try for one of the Travelling Studentships, with a fixed resolve to go abroad for six or twelve months when he has been five or six years in the profession. It is a mistake, in my opinion, to go sooner. If he is not fortunate enough to obtain a Travelling Studentship, and cannot go without one, he should at least endeavour to live very quietly and save up for the Italian excursion of this Association, not that you should return with the idea of erecting buildings in the Italian or Grecian taste in this country, but that you may have your eyes opened to the marvellous works which men of genius have been able to raise in other countries than your own.

All this you will say is a formidable programme for a young man to face, and it undoubtedly is so, but you *must* face it to attain a moderate proficiency in the profession you are entering, to succeed in it. You must give up many pleasant and attractive occupations, you must "scorn delights and live laborious days," and look for your reward in the future not in money or in position, but in the satisfaction to be derived from all work honestly done to the best of your ability.

Gentlemen, to you is left a glorious heritage, and which no doubt some among you will take advantage of. Architecture just now seems to have arrived at a point (after running through all the styles as an education) when she is only waiting for the *man* to make a new departure and mark an epoch in her history; our great living architects have *done* their duty in advancing the art, men of, say, my generation are now hardly likely to carry it much further; but for you, with a career still to run, everything is open, no profession in the world offers greater possibilities than ours at the present time. Under the present system of Architectural Education "self-help" must be your motto, and the gods help those, remember, who help themselves.

[A report of the discussion which followed will be found on another page.]

Obituary.—The death is announced of Mr. Parke Nevile, C.E., the City Engineer of Dublin, in his seventy-fifth year.

LOCAL GOVERNMENT INQUIRY AT RICHMOND.

Mr. Arnold Taylor, Inspector of the Local Government Board, held an inquiry at Richmond, on Wednesday last, respecting an application of the Richmond Vestry and the Rural Sanitary Authority, for sanction to borrow 100,000*l.* for the construction of works of sewage disposal.

Mr. Burt explained in detail the various attempts which had been made by the Richmond and neighbouring authorities to deal with their sewage, and so comply with the law, pointing out that Richmond had spent about 11,000*l.* in futile sewage schemes, 8,500*l.* of which was paid to the Main Thames Valley Board, now dissolved, but which spent 44,600*l.* during its eight years' existence. The only result of that Board (beyond spending the ratepayers' money) was the staving off of the penalties of the Thames Conservancy Board for allowing crude sewage to continue to flow into the river. The scheme of the Richmond Authorities was designed by Mr. Melliss, C.E., and was practically on the same lines as the scheme put forward before the Committee of the House of Commons, when the joint board was dissolved, but the site of the sewage works was now at Mortlake instead of Barnes. They had been governed by four considerations:—That they had absolutely to cut off their sewage from the Thames; that they should collect and clarify the sewage so as to make it free from nuisance in the river; that they had to do it without nuisance in their own locality; and to do it with as little disturbance of existing sewers as possible. They had made an arrangement with the Duke of Devonshire, Mr. Popham, and the Pullman Trustees by which they had undertaken not to oppose the scheme. The site of the pumping station at Mortlake will be surrounded with trees so as to hide it from public view. Mr. Burt read the correspondence with the Local Government, in which the Rural Sanitary Authority asked, in November, 1885, if a scheme with a small filtration area of prepared beds through which the clarified sewage should be made to pass before being discharged into the river would satisfy the requirements which sanitary authorities had to meet. He read the reply from the Local Government Board in the affirmative. In this scheme the clarified effluent passed not through earth but through specially prepared filter beds. The total area to be dealt with in the scheme is 6,103 acres. It is proposed that each contributing authority shall be rated equally, on the basis of their rateable value. The scheme provides for the separation or exclusion as far as possible of rainfall and subsoil water from the sewers.

Mr. Melliss, C.E., the designer of the scheme, a Member of the Institution of Civil Engineers, of the Geological and of Chemical Industry, gave evidence stating that he had estimated the future population of the district at 79,044, as against the present population, 33,630. The inhabited and uninhabited houses in the district were 8,053, giving an average number of 4·56 persons to each house. He had taken 43 gallons per head, allowing for rainfall and subsoil on the roofs and yards of the buildings, every twenty-four hours, as the basis for the capacity of the sewers, one-half to flow off in six hours, and the whole in twelve hours. The total carrying capacity of the intercepting sewers is 10,912,180 gallons. It was originally intended that the main, starting from the boundary of Petersham, should pass through the grounds of Richmond House, but that had been diverted to the route along the Lower-road. The principal main sewer will start from Petersham boundary in Wilderness-lane, where its invert will be 1·43 below ordnance datum; thence to the point where it joins the towing-path a distance of 243½ yards. It will be a 16-inch circular stoneware pipe surrounded with concrete, having a gradient of 1 in 550. This sewer, with the same size and gradient, will be continued along the towing-path towards Richmond Bridge for a distance of 354 yards, but it will be an iron circular pipe surrounded with concrete. From thence along the towing-path the sewer will be continued to the Friar's-lane outfall, a distance of 541½ yards, being an 18-inch iron circular pipe surrounded with concrete, with a gradient of about 1 in 600. A sewer will start from Asgill-lane outfall, where its invert will be 3 ft. above datum, and terminate at Friar-lane outfall, a distance of 275 yards. An 18-inch iron circular

pipe surrounded with concrete, having a gradient of 1 in 400. The foregoing sewers will intercept the existing Richmond sewer outlets into the Thames. A sewer will start from Friar's-lane outfall, where its invert will be 7·45 ft. below ordnance datum, along the lane, the eastern side of Richmond-green, across the station yard, to the Kew-road and Mortlake-road to within fifty yards of the Mortlake boundary, a distance of 1,979 yards. It will be egg-shaped 3 ft. 3 in. by 2 ft. constructed of blue Staffordshire and Gault brick, in cement and cement concrete, having a gradient of 1 in 950. This sewer will be continued along the Lower Richmond-road towards West Lodge, and the size will be increased to 3 ft. 6 in. by 2 ft. 4 in., having a gradient of 1 in 1,100. The invert at the lower end of this sewer will be 18 ft. below datum; from thence the sewer will be enlarged for the purpose of securing the Barnes and Mortlake sewer, 4 ft. 3 in. by 2 ft. 10 in., and follow the pathway from Mortlake to Kew, then along the roadway to the pumping-chambers and precipitation works where the invert will be 19·19 ft. below datum, and 31 ft. below the surface of the ground, having a gradient of 1 in 1,200. The Barnes and Kew sewer will be laid independently to the pumping station.

The air-shafts are to be erected seventy yards apart. It is intended to provide at the pumping station three compound horizontal condensing engines, with three boilers 100-horse-power each. One of these engines would be a reserve. The precipitation works would be raised 1 ft. above the highest flood level of the Thames; the floors of the buildings being 18 ft. above datum. The sludge presses would consist of thirty chambers, 36 in. circular presses, one set of hydro-pneumatic forcing reservoirs, one sludge-pump, air-pump, and a steel air-receiver. The works will generally provide for twenty per cent. more than present requirements. The effluent water flowing over the weirs to the tanks, as well as that drawn off by flood-valves to a depth of 3 ft. 9 in. in the tanks, will discharge on to the high-level filters, consisting of coarse sand, shingle, and fine sand and carbon, —the remaining 2 ft. of effluent water overlying the sludge, when it is required to empty the tank will discharge on to the lower level filters, composed of the same materials as the higher. The surface of the high-level filters is 13·5 ft. above datum, and the floor 10 ft. above datum; the surface of the low-level filters is 11·12 ft. above datum, and the floor 9 12 ft. above datum. The water after passing through the filters will discharge from the high-level filter when ebb tide is 10 ft. above datum, and from the low-level filters when it falls to 9 ft. above datum. The filters contain storage-room for about 383,000 gallons, or about two hours' fine weather flow, but when the filters cannot be emptied by gravitation because of the state of the tide, the water will be lifted and discharged at a level of 18 in. above datum by steam pumps provided for that purpose.

Mr. Montague Shearman, in opposing the scheme, said that it did not comply with the recommendations of the Royal Commission on the Disposal of Sewage, inasmuch as it did not provide for the filtration of the effluent water through earth.

Mr. Burt said that it was impossible to get land of sufficient area to deal with the sewage in that way. The filters occupied 1¼ acre, and the site 11 acres. The recommendation of the Commission was contingent on the possibility of procuring sufficient land.

Mr. Melliss, asked in regard to the complaints in reference to the Chiswick works, said he was not surprised at these complaints, as the sludge had been allowed to lie in large bulk even when it had not been pressed. Mr. Melliss said that the chemicals to be used, milk of lime, salts of alumina, and carbon, would be effective so far as the chemical process was concerned. The decision of the Local Government Board will be given in due course.

Penarth. — The memorial stones of the Presbyterian Chapel here, which is now being rebuilt, were laid on the 1st instant. The building is in a free treatment of Romanesque, and is being carried out from the designs and under the supervision of Mr. J. H. Phillips, of Cardiff. Accommodation is provided for about 380, and the cost will be about 800*l*.

STAPLE INN, HOLBORN.

The conditions of sale of these premises, which are to be sold by auction by Mr. Robert Reid, on the 26th instant, have just been issued. The property to be sold, which does not include the block of chambers at the south angle of the Inn, which were recently purchased by Her Majesty's Commissioners of Works and Buildings, occupies a superficial are of 33,364 square feet, and has a frontage of 124 ft. towards Holborn. The whole of the buildings on the site will become the property of the purchaser, including the fittings of the hall, with its open-timbered roof, the wall-panelling, minstrels' gallery, stained glass, &c. The purchaser is to undertake to keep an approach from Holborn to the Land Registry Office, in the rear of the Inn. and the premises adjoining, but will not be bound to keep the approach in its present position, but may at any time substitute for the same a passage-way, 8 ft. wide, over any part of the premises. The purchaser is further to undertake not to erect any buildings within a distance of 35 ft. from the front of the Land Registry Office; but, subject to these restrictions, it would appear that the whole of the ground may be occupied by buildings, and from the character of the site and of the buildings now erected upon it there would be very little difficulty in entirely covering it.

The title to the property commences with an indenture of feoffment perfected by livery of seisin, and dated the 18th of December, 1811, and a fine duly levied pursuant to a covenant contained in such indenture. The property is extra-parochial; one of the vendors has hitherto been appointed overseer, and has paid the rates by means of payments called Inn dues, and a payment by Her Majesty's Commissioners of Works in respect of the property referred to as sold to them. The amount so paid is collected from the tenants. Staple Inn is one of the extra-parochial places mentioned in Schedule C of the Metropolis Local Management Act, 18 & 19 Vict., c. 120, s. 176, as not being liable to be rated under that Act except for the purpose of contributing to the expense of the main drainage of the metropolis. By the Metropolitan Board of Works (Loans) Act, 1869, s. 25, the places mentioned in Schedule C of the above Act were made liable to the Metropolitan Consolidated Rate, except so far as they may be entitled under the General Improvement Acts to any exemption from any rate or assessment. All abstracted deeds will be delivered to the purchaser on completion, together with a book containing the record of the admissions of the members of Staple Inn. These documents are subject to be produced to the Commissioners of Works and Buildings under a statutory acknowledgment and undertaking given by the vendors, and the book is also liable to be produced and copies of it furnished to any of the Ancients of Staple Inn who were parties to the conveyance to the vendors, and to be delivered up at the end of fifteen years from the date of such conveyance to the then pensioner (if any) of the Society of Staple Inn. The shops and chambers are let temporarily, subject to three months' notice, and produce a net income of 1,600*l*. per annum, or about 2 per cent. on the purchase-money of 80,000*l*., at which price it was bought by Messrs. Trollope.

The Society for the Protection of Ancient Buildings are about to present a memorial to the Corporation of London on the subject of the proposed sale of Staple Inn, praying the Corporation to take steps for its preservation as a civic antiquity of great interest.

MR. STANLEY G. BIRD.

Mr. Stanley G. Bird was entertained at dinner on the 8th instant at the Café Royal by his colleagues of the Institute of Builders, the Builders' Accident Insurance (Limited), and the Central Association of Master Builders of London, previously to his departure on a visit to India.

Mr. George Burt, J.P., presided. The health of "The Queen" having been loyally responded to, the Chairman said that in proposing the toast of the evening it was unnecessary for him to make a long speech, but he would just give a short outline of Mr. Bird's connexion with the building trade. Previously to 1872 he was connected with the Builders' Society, and in that year took a prominent part in the revival of the Central Association of Master Builders of London upon a permanent basis, and was appointed honorary secretary, which office he filled till the termination of the masons' strike in 1878. When the Employers' Liability Act was passed in 1880, Mr. Bird took a prominent part in the formation of the Builders' Accident Insurance, Limited, of which he is at present chairman; and he served for your years as President of the National Association of Builders, which society he assisted to form in order to secure united action in trade matters among the various local associations, and he was now vice-president. In 1884, the incorporation of the Institute of Builders was accomplished mainly through his exertions, and he was now President of the same, as well as vice-president of the Central Association. He was a past-president of the Builders', and Builders' Clerks', Benevolent Institutions, and had filled the office of Master of the Tylers' and Bricklayers' Company, in addition to which he was the Colonel of one of the best-known of our Volunteer regiments. The services Mr. Bird had rendered the building trade would be seen from what he had already stated, and it was with the greatest pleasure he (Mr. Burt) presided that night, when they were all assembled to wish their good friend "God speed," and a safe and pleasant journey.

The toast having been most cordially responded to, Mr. Bird thanked his colleagues for the honour they had conferred on him in entertaining him at dinner previously to his departure.

Illustrations.

TOWN HALL AND MUNICIPAL BUILDINGS, EASTBOURNE.

We give a view, detailed view, and plan, of this building, which was opened on October 20.

The site has an extensive frontage; four thoroughfares meet there, viz., Grange-road, Meads-road, Grove-road, and South-street; and the buildings are some 200 ft. in length.

The design is described by the architect, Mr. W. Tadman Foulkes, as an adaptation of the Renaissance style of architecture. The materials used for all the elevations are best dark red bricks, with a liberal use of Portland stone dressings. The roofs are covered with Westmoreland green slates, the cresting and roof terminations being of ornamental iron-work.

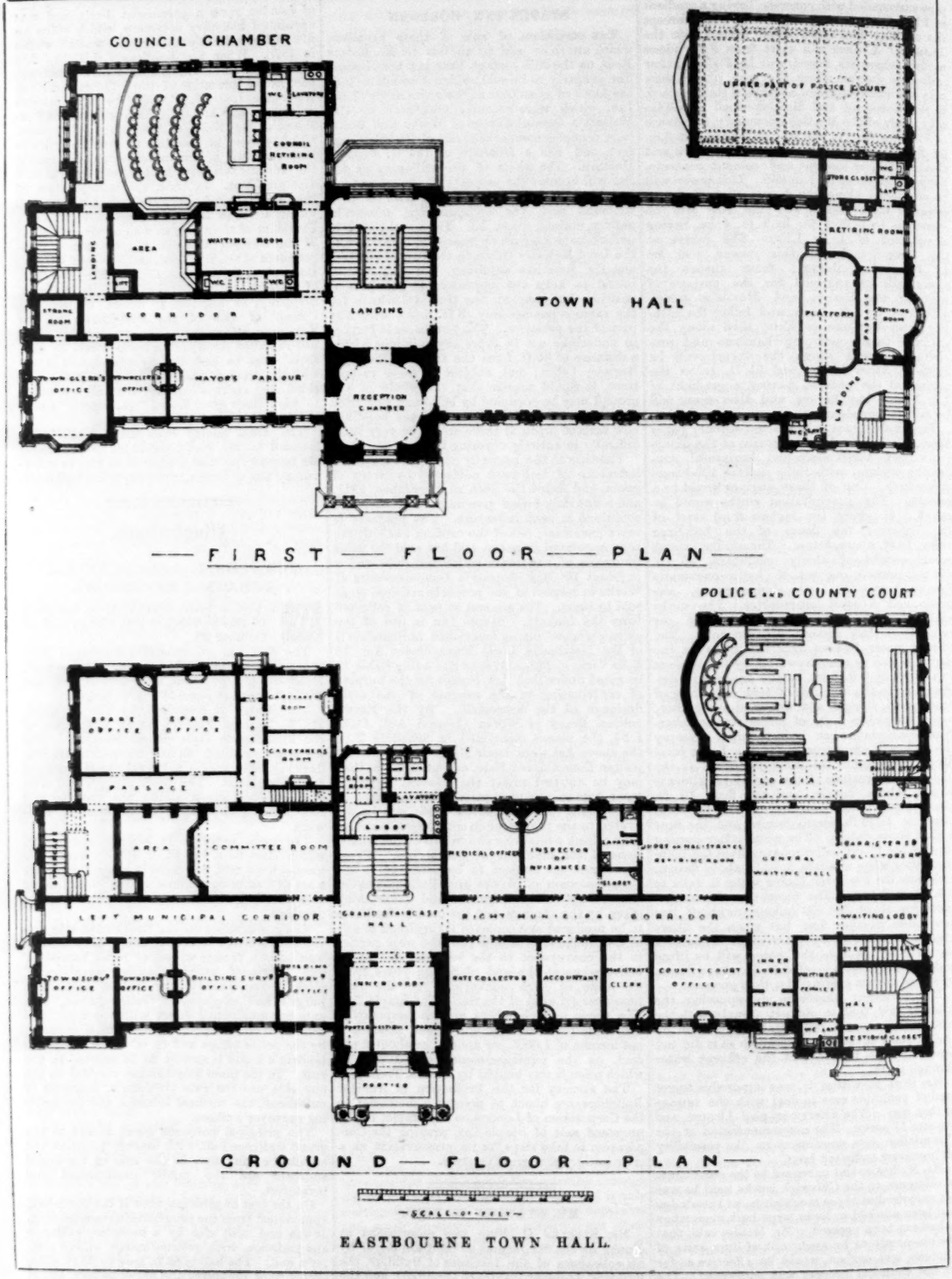
The main entrance is beneath the tower, which rises to a height of 130 ft. above the ground level, and provision is made therein for a set of Cambridge chimes and a clock having four faces, illuminated at night, but not yet provided.

The ground-floor on the Grove-road side provides for a police or county court, large general waiting-hall, female witnesses' room, barristers' and solicitors' retiring-rooms, magistrates' clerks' room, county court offices, and also a judge's and magistrates' retiring-room, with ante communicating direct with the court and bench. The basement of the conrt is occupied by the police offices and cells, whilst a superintendent's house is shortly to be erected in the rear. In the main longitudinal corridor on the one side are the rate collector's, inspector of nuisances', the medical officer's, and the building surveyor's offices.

The principal entrance gives access to the grand staircase hall, with marble pilasters and enriched ceiling, and in the rear of the grand staircase are the public cloak-rooms and lavatories.

On the first or principal floor is the Town-hall, approached from the principal staircase-landing, at one end, and also by a secondary entrance and staircase, with retiring-rooms, at the platform end. The hall is 83 ft. long by 45 ft. wide, exclusive of orchestra and organ-gallery, and it is 26 ft. in height in the coved and enriched compartments of the ceiling. The walls between the windows have engaged marble pilasters and panelled oak dado, and the floor is laid with oak. The windows are arranged on each side of the hall, and are recessed.

From the principal landing and from the town-hall doors communicate with the reception-chamber, which is under the tower. The floor is laid with Arrowsmith's parquet. There is also a Mayor's parlour and ante-room, and contiguous to these are the town clerk's offices and muniment-room.



EASTBOURNE TOWN HALL.

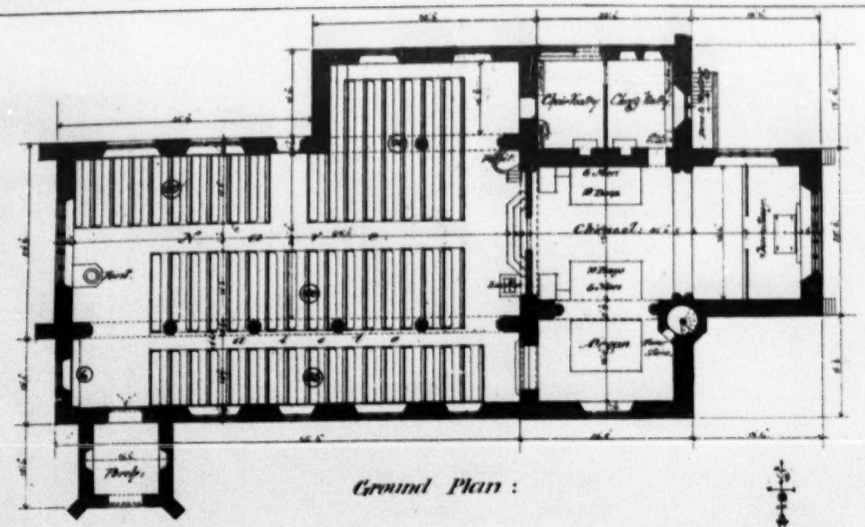
The council-chamber is also on the first floor, with waiting, retiring, and robing rooms, and approached by the public by a staircase from the official entrance. The chamber has panelled walls and ceiling, and the floor is all in oak. Thus the chief civic apartments are *en suite* and on one floor.

The upper portions of the buildings are devoted to spare offices and store-rooms, whilst in the tower are the clock-room and belfry.

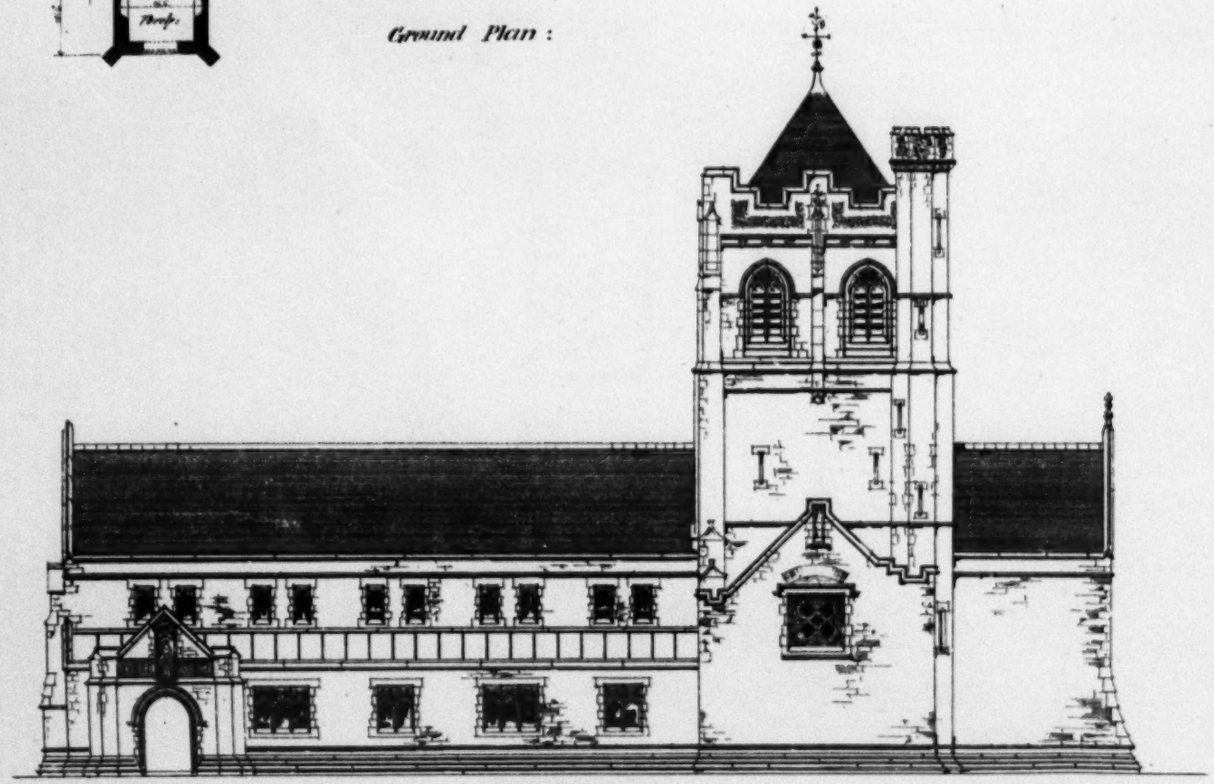
The whole of the floors are of fireproof construction, and all the joinery throughout is of wainscot oak. All the external walls, which are of very substantial thicknesses, are built hollow, and tied with Jennings's vitrified brick ties.

The walls of the basements are for the most part lined with best white glazed bricks. All the staircases are of stone; and the halls, corridors, and passages are laid with marble mosaic tiles supplied by Messrs. Diespeker & Co., Holborn Viaduct, London; the walls of all lavatories, &c., being lined with Minton tiles. The stained glass and lead glazing have been manufactured by Mr. Swaine Bourne, of Birmingham; and the window of the grand staircase contains heraldic devices. The carving of stone and wood work has been very excellently executed by Messrs. Naylor Bros., of Aston, Birmingham.

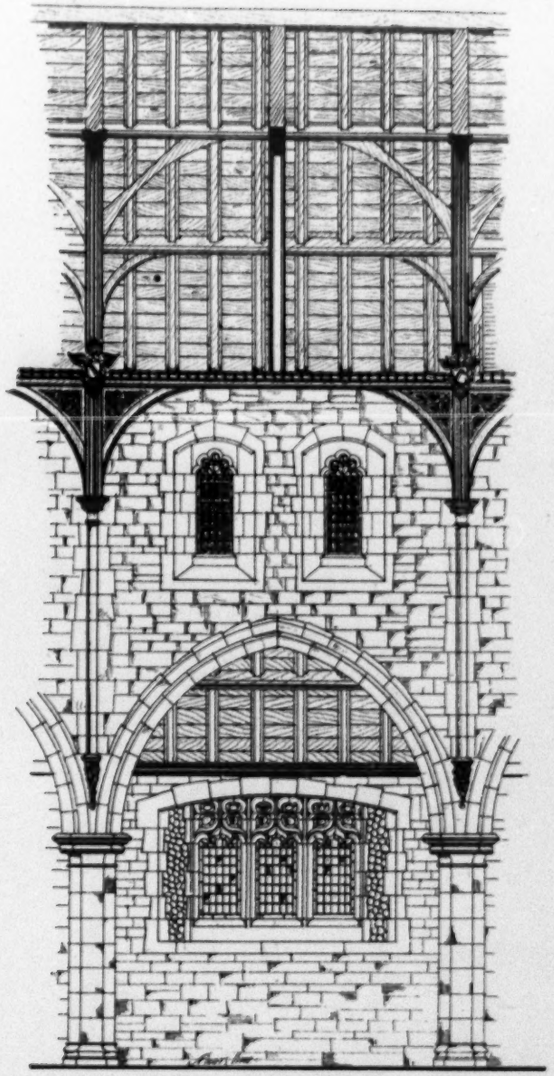
Special attention has been given to the thorough ventilation of every apartment, and the latest improvements in that direction have been introduced; the heating, independently of the use of open fires, is effected by means of low-pressure hot-water pipes on the gravit



Ground Plan :



SOUTH ELEVATION.



A BAY OF THE NAVE.

Plan of door molding

Chancellery window

"PHOTO-LITHO" SPRAGUE & Co., 22, MARTINS LANE, CANNON ST. LONDON, E.C.

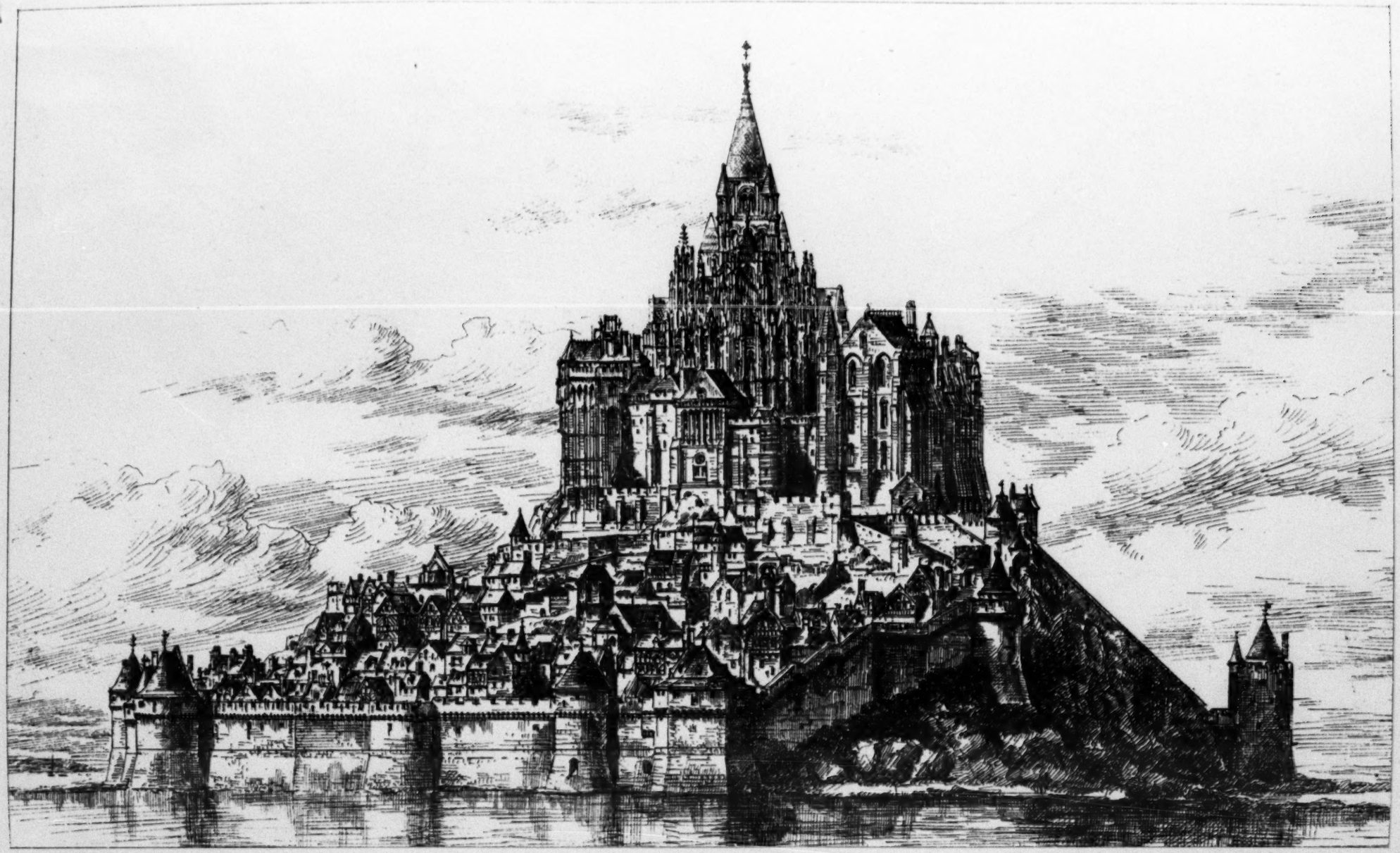
DESIGN FOR A VILLAGE CHURCH BY Mr. W. ARTHUR WEBB.

Awarded the Architectural Association Medal, 1886.

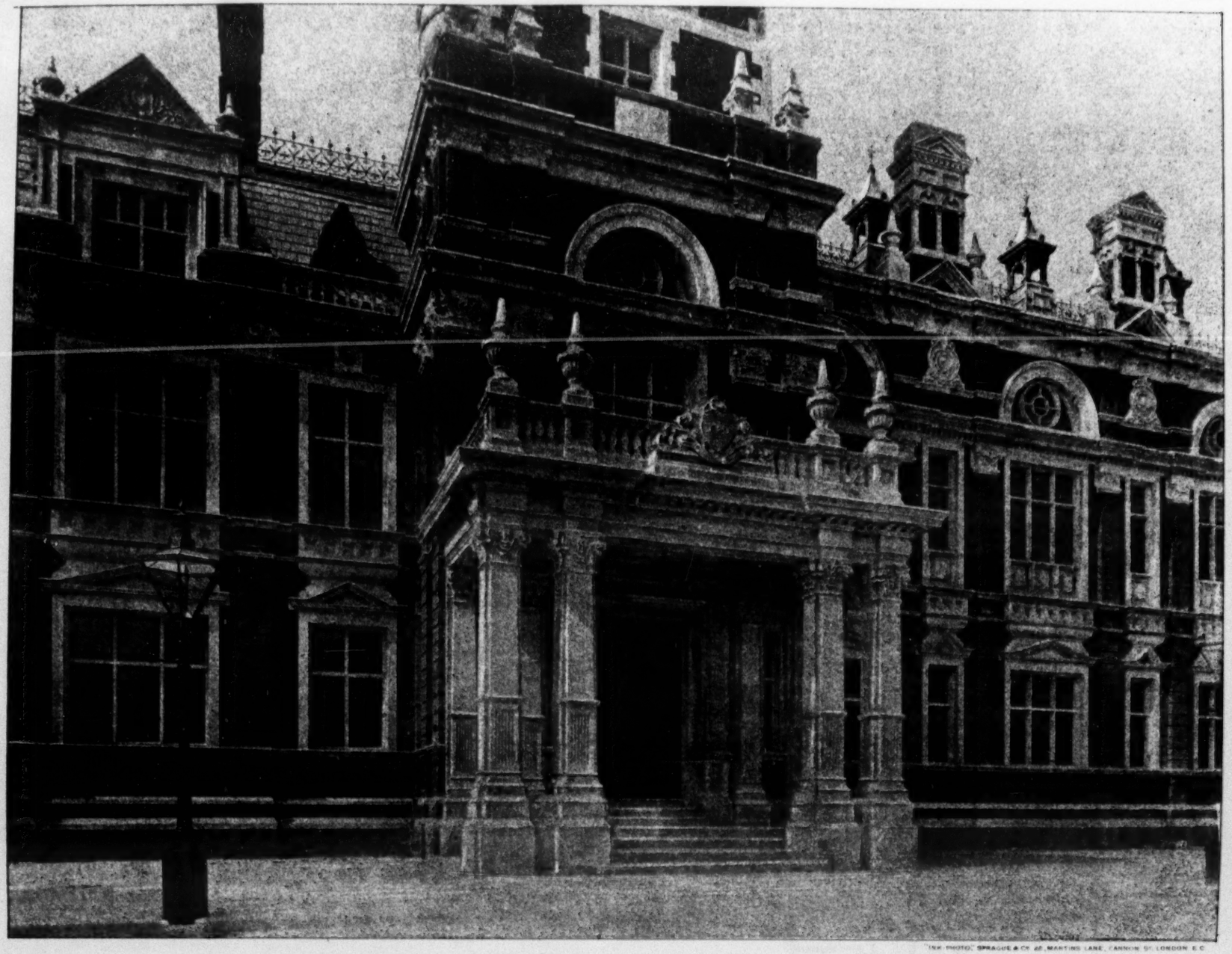
Awarded the Architectural Association Medal, 1886.

Wyman & Sons, Photo-Litho. 74 Queen St London, W.C.

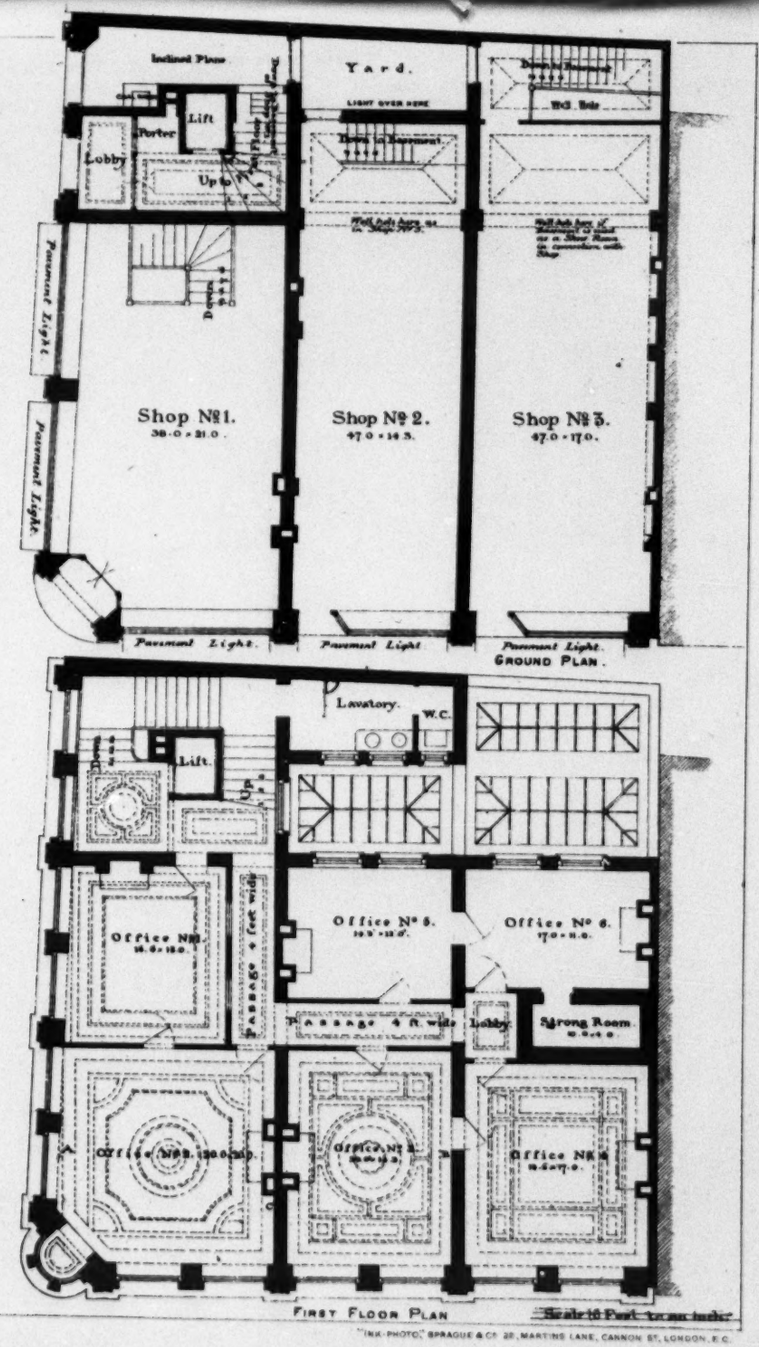
TOWN HALL, EASTBOURNE: PRINCIPAL FRONT.—Mr. W. T. Foulkes, Architect.



MONT ST. MICHEL: PROPOSED RESTORATION.— M. Corrover, Architect.



TOWN HALL, EASTBOURNE: CENTRE PORTION OF PRINCIPAL FRONT.—Mr. W. T. Foulkes, Architect.



PREMISES, CORPORATION STREET, BIRMINGHAM.—Mr. WILLIAM READ, ARCHITECT.

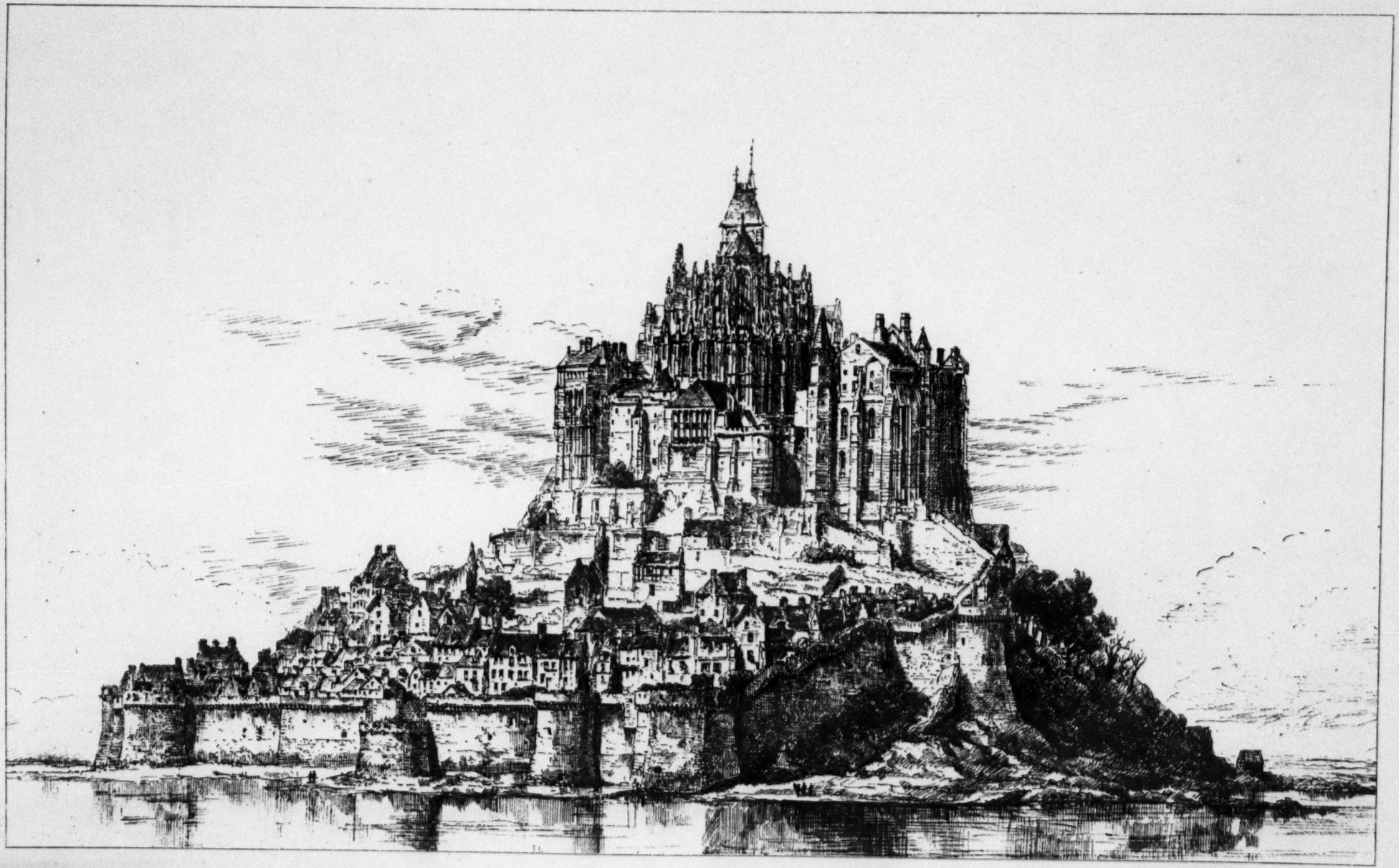
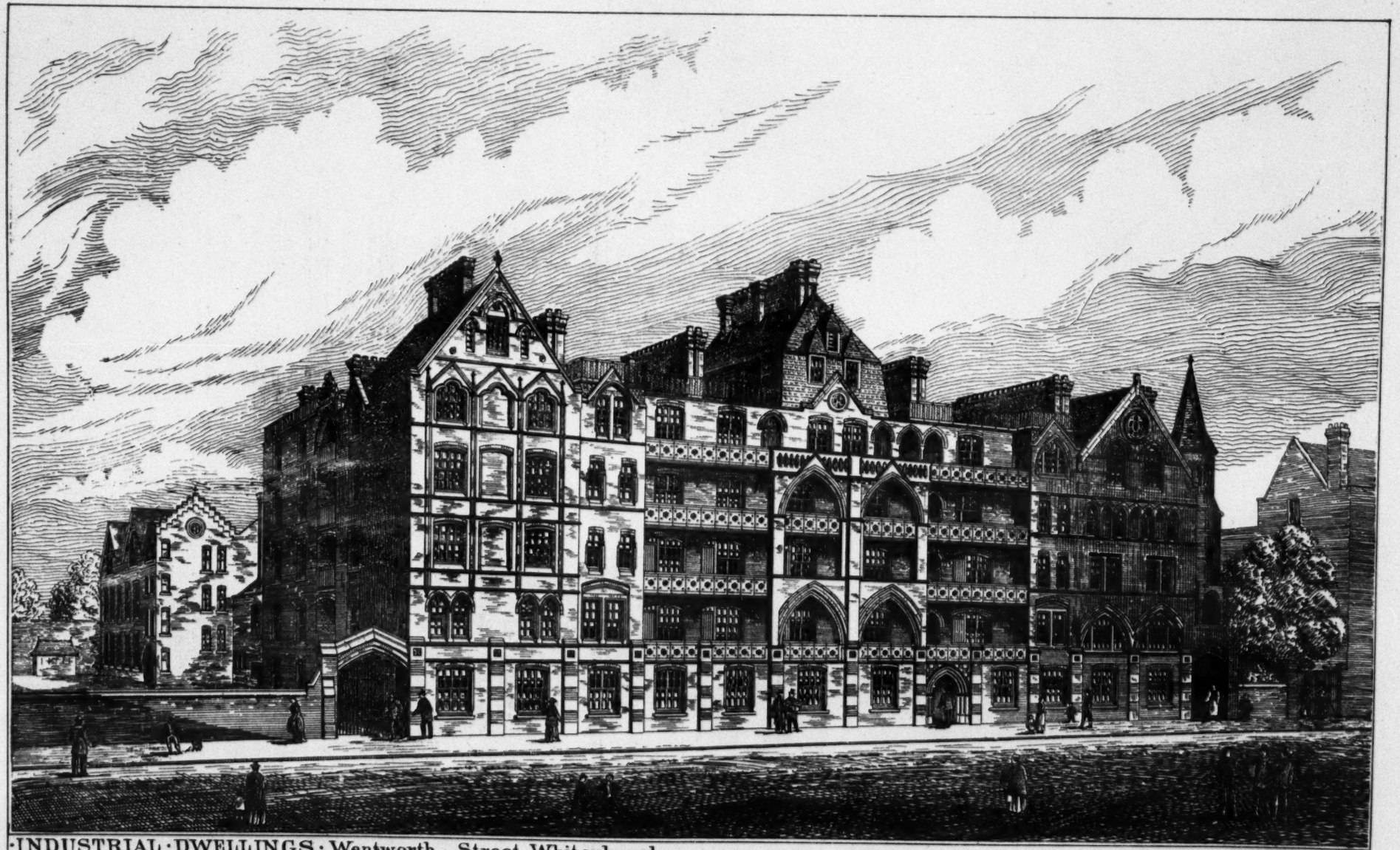


PHOTO-LITHO. SPRAGUE & CO. 28, MARTINS LANE, CANNON ST. LONDON, E.C.

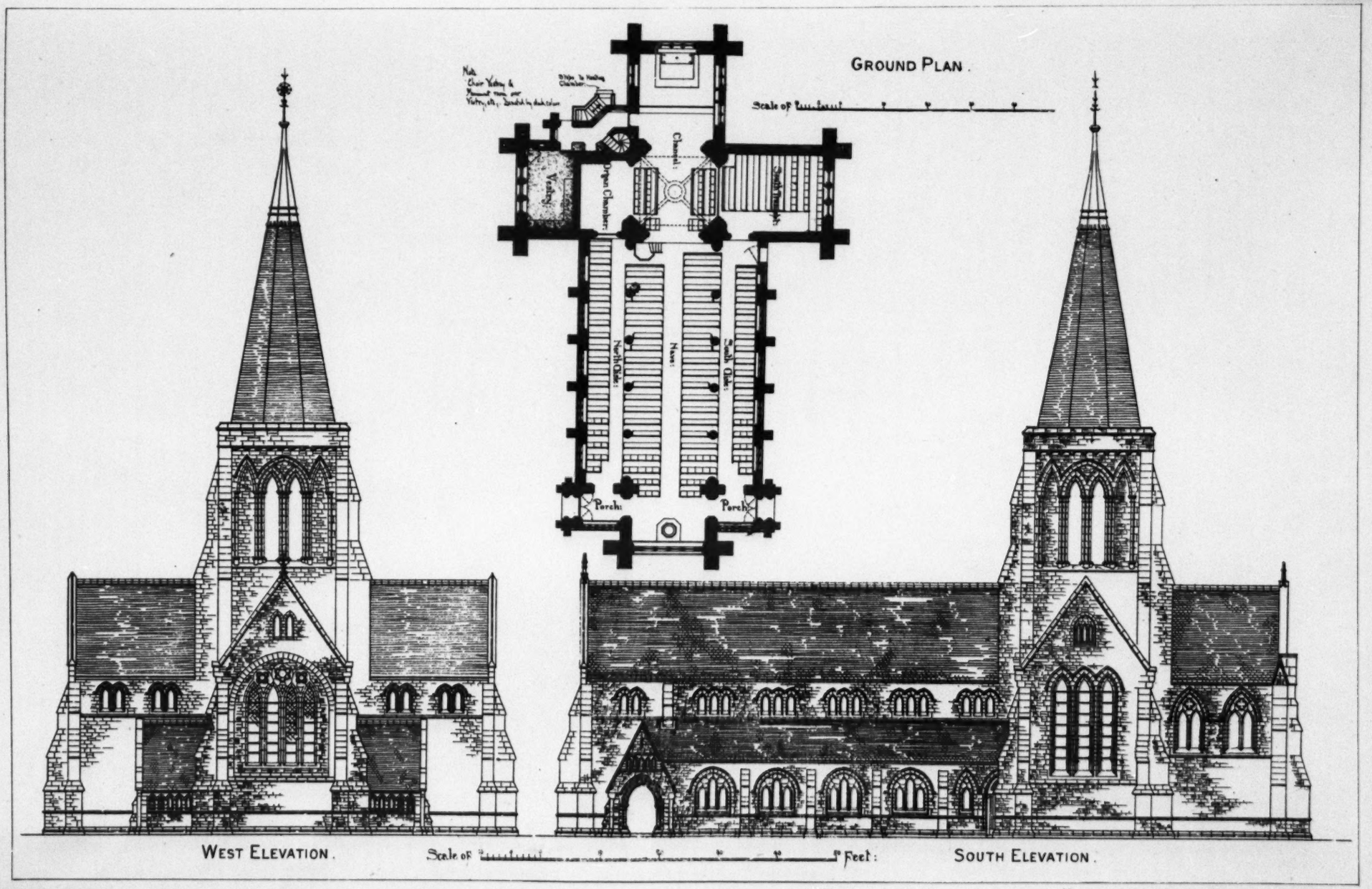
MONT ST. MICHEL: PRESENT STATE.



·INDUSTRIAL·DWELLINGS·Wentworth·Street·Whitechapel·E·

MR. E. HOOLE, F.R.I.B.A., ARCHITECT.
6 Queen St London. W.C.

Wyman & Sons, Photo-Litho



"PHOTO-LITHO" SPRAGUE & Co., 22, MARTINS LANE, CANNON ST. LONDON, E.C.

DESIGN FOR A VILLAGE CHURCH BY Mr. W. HARGREAVES RAFFLES.

Architectural Association Medal Competition, 1886.
Honorably Mentioned.

system; the work has been carried out by Messrs. Benham & Sons, of Wigmore-street, London.

The whole of the builder's work has been carried out by Mr. James Peerless, contractor, of Eastbourne, Mr. W. T. Vale, of London, being the clerk of works.

The cost, exclusive of the site and furniture, will be upwards of 33,000*l*. The architect is Mr. W. Tadman Foulkes, of Birmingham, whose original plans were selected for the first premium in a competition as far back as April, 1880.

The whole of the lighting arrangements are electric, gas being employed as supplementary. The Eastbourne Electric Light Company have laid in the mains and apparatus, and the electroliers and brackets, which are of wrought-iron, hand-made, have been supplied by Messrs. Winfield & Co., of Birmingham. The furniture and fittings, which are chiefly made from the designs of the architect, have been executed by local firms.

PROPOSED NEW PREMISES, CORPORATION-STREET, BIRMINGHAM.

These premises are to be erected on a plot of land at the corner of Corporation-street and Little Cannon-street, if terms can be arranged with the Corporation of Birmingham, to whom the land belongs.

The ground-floor will be used for retail shops (as required by the Corporation), with spacious well-lighted basements, and with goods entrance to each at the back.

The first-floor will be devoted to first-class offices handsomely finished.

The second and third floors are intended to be used as residential chambers, with entrance from Little Cannon-street. For the convenience of the residents a passenger-lift is provided from the ground-floor upwards.

The fourth floor will be utilised as caretaker's room and store-rooms.

The two street elevations will be built with red and buff terra-cotta, and the walls of the areas throughout will be faced with white glazed bricks. The front roofs will be covered with tiles.

The estimated cost is 13,500*l*., and if fire-proof throughout 15,000*l*.

The architect is Mr. William Read, of West Kensington and Birmingham.

DESIGNS FOR A VILLAGE CHURCH.

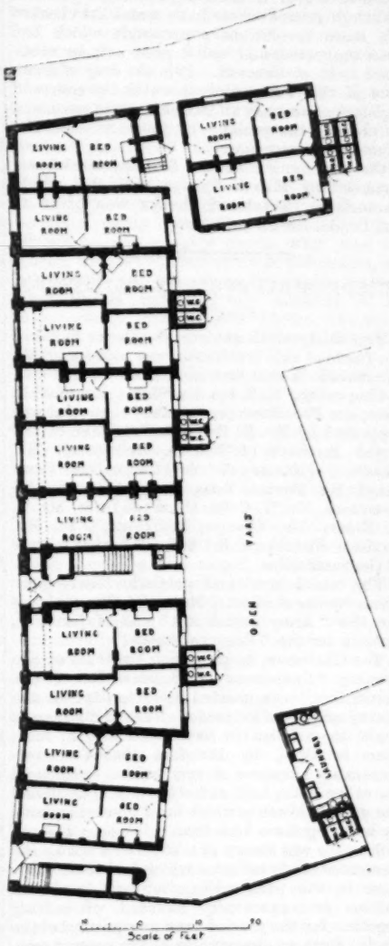
The two designs which we publish this week were submitted in competition for the Architectural Association Medal this year; subject, "Design for a Village Church." That by Mr. Arthur Webb was the successful one. The designer seems to have sought to emphasise the "village church" character by low proportions and square-headed windows, avoiding the aspiring effect of the more lofty pointed window; and this is no doubt one way of doing it, though it would be impossible to give any kind of special receipt for the character of a village church. Not infrequently the village church of Mediæval times was marked by low walls, but a comparatively very lofty roof; in other words, it is more timber than stone; and there are many buildings of this type the rustic effect of which is unmistakable; they would seem quite out of place in a town. Mr. Webb's design might do well enough in a town, but it is sufficiently simple in expression to be quite suitable, perhaps more suitable, in a village. The alternation of two-light and three-light windows in the aisles is a pretty incident; so is the band of quatrefoiled panels over the porch door; the clearstory windows repeat rather unnecessarily the square forms of the ground story, and look a little too much like house windows externally. In the main, however, the design conveys the expression aimed at.

The second design, by Mr. Hargreaves Raffles, received honourable mention in the same competition, but was considered, we understand, to go a little beyond the architectural scope of a "village church": a judgment in which we concur. The author says:—

"The design of the church is kept rigidly simple, as being more suitable for a country church. Accommodation is provided for 350 persons, exclusive of the chancel. The clergy vestry is placed on the ground-floor, and a choir vestry and small muniment-room are provided immediately over the clergy vestry. The church is designed to be in stone, both externally and internally. Tiles would be used for the roofs."

INDUSTRIAL DWELLINGS, WENTWORTH STREET, WHITECHAPEL, E.

These dwellings, now in course of erection from designs by Mr. E. Hoole, form parts of the Goulston-street and Flower and Dean street scheme of the Metropolitan Board of Works. Wentworth-street has been widened, and the dwellings replace the old common lodging-houses which formerly stood on the site. One hundred and thirty rooms are provided in tenements of three, two, and one rooms, and are approached by stone staircases, which also lead to the flat roofs, and communicate on each floor with the offices. Laundries are constructed on the flat roofs, which serve as drying-grounds.



Industrial Dwellings, Wentworth-street, Whitechapel.—Plan.

Each living-room is fitted up with sideboard, coal-locker, and cooking-range, and has at hand a dust-shoot and pail service. An attempt has been made to avoid the barrack-like appearance too often characteristic of this class of dwelling, as it is found that the rooms let more readily when a more cheerful appearance is given to the exteriors. Red bricks have been used for facing, and Lascelles's slabs for the balustrades to balconies; the roofs, where not flat, being covered with red tiles. The works are being executed by Messrs. Williams & Son, builders, of Thornhill-square, Islington, N.

General Steam Supply in Berlin.—A scheme is on foot in Berlin for supplying factories and dwellings with steam just as gas and water are now furnished. It is proposed to erect a building of five stories, containing 100 boilers, whence steam will be distributed throughout the town. It is believed that such an arrangement would result in a cheaper supply of steam than at present, but it may be doubted whether the inevitable condensation of steam would not offer too great obstacles to the carrying out of the plan.

THE SURVEYORS' INSTITUTION:

PRESIDENT'S ADDRESS.

At the opening meeting of this Institution for the present session, held on Monday evening last, a crowded audience of members assembled to hear the opening address by the President, Mr. W. J. Beadel, M.P. We quote some passages of it:—

For our Institution it may fairly be urged that if it has one distinguishing characteristic it is that its aims are rigidly practical, and it is for this reason, in all probability, that its success has been so rapid and assured: its "Transactions" are a storehouse of valuable information, which we seniors should have been glad of in our younger days. Owing, however, to the form of the "Transactions," and to the necessary conditions of contribution, they have the defect, common to all publications of the kind, of failing to elicit the opinions of those members who are prevented, either by distance from London or by the pressure of their engagements, from attending the evening meetings. It is to remedy this defect that the Council have introduced the new publication entitled "Professional Notes," to which I earnestly invite the attention of members. The lines of the "Notes" being so varied, no member can complain that he is without an opportunity of contributing to the common stock of knowledge, and if adequately supported they will become of the utmost value for purposes of reference upon almost every subject in which surveyors are interested. I, therefore, urge members to do their utmost to make this new departure a success by contributing short papers and paragraphs, comments upon subjects dealt with at the ordinary general meetings, abstract reports of cases under the Agricultural Holdings Act, requests for information upon points of practice, or matters difficult of interpretation.

There can be no doubt that the Institution now includes among its members the great majority of the leading land agents and surveyors in England and Wales. The actual membership at the present time (including all classes) is, I understand, over 1,200. But it is also the case that there are some whom we should be glad to welcome among us, and who have not associated themselves with the Institution. The time is rapidly approaching when, under the provisions of the Charter, the passing of the Examinations will become the only means of admission, and I venture to express a hope that, in the interval, all the practising surveyors who have not yet joined us may see their way to do so.

In reviewing the past year, what must be first and foremost in our minds is that, instead of a revival of confidence in land as an investment, there is still a very widespread indisposition, notwithstanding the great accumulations of wealth which are known to exist, to purchase it, the old charm connected with its possession having, for a time at least, been dissipated. How soon, or in what way, things will be altered for the better it is impossible to say; that they must alter for the better I not only hope but believe. The land of this country is restricted in area. Its user for residential purposes is limited, while the population is yearly increasing. From the earth proceed all riches, and, sooner or later, a revival must come. As an eloquent writer puts it, though with objects far different from mine, "Land is the habitation of man, the storehouse upon which he must draw for all his needs, the material to which his labours must be applied for the supply of all his desires; for even the products of the sea cannot be taken, the light of the sun enjoyed, or any of the forces of nature utilised, without the use of land or its products. On the land we are born, from it we live, to it we return again,—children of the soil as truly as the blade of grass or the flower of the field. Take away from man all that belongs to land, and he is but a disembodied spirit. Material progress cannot rid us of our dependence upon land. It can but add to the power of producing wealth from land."

This being so (and who can deny it?), I presume there is no one so unwise as to seek to minimise its importance or pretend to regard the interests of land as subservient to any other. In its essential relations to human progress, and indeed to human existence, its place must be ever paramount. To put it in a way that must command assent, one of the densest populations on the globe will not dwell for any length

of time in the midst of a wilderness. Meanwhile, we are under the cloud, how dark and unpropitious cannot be better illustrated than by actual statistics.

The records of the Estate Exchange, an organisation now of some years' standing, throw such a light upon the altered state of things as I should scarcely have expected to find, and it has occurred to me that some figures as to the dealings in country estates and agricultural land may be interesting, comparing the year 1875 with the year 1885. It appears that in 1875, 95,894 acres were disposed of, the purchase-money being 4,969,783*l.* (say 5,000,000*l.*), or at the rate of 52*l.* per acre, while in 1885, 31,070 acres only were disposed of for 986,253*l.*, or an average of 32*l.* per acre,—in round figures less than one-third of the quantity, one-fifth of the total amount in money, and a reduction in the acreage price of 40 per cent.

For the purpose of making this information more reliable as a test, all properties in London and within fifteen miles, market and fruit gardens, and residential estates under 100 acres, or where the value of the house preponderated, are excluded.

So far as this year has gone, the record to the present time is as follows:—Land sold, 13,496 acres; purchase-money, 356,427*l.*; average price per acre, 26*l.* The lowest price which has come under my observation was the sale by auction of a farm in Essex, containing 132 acres (30 acres grass), with dwelling-house, farm-buildings, and three cottages. With the exception of 21 acres copyhold, the property is freehold, with a new railway passing through, and a station projected upon it. The price realised was 650*l.*, not representing anything like the cost of the building and fencing, leaving out of consideration altogether the land itself. This, no doubt, is an exceptional case, but tends to illustrate the severity of the crisis.

In City properties values (warehouses, somewhat over-built, excluded) have been fairly maintained. In the suburbs, houses and land (except in specially-favoured districts) have been depreciated partly by over-building and partly by reduced spending power. This former should very speedily cure itself with our rapidly-increasing population; and the improvement in trade, which would appear to have already begun, should remedy the latter.

With the increased rail and tramway facilities for reaching suburban districts, new estates will be opened up, and it is important that in their development regard should be had to considerations of health, by allowing a more liberal extent of garden ground than has been in many cases heretofore the practice.

The quinquennial valuation of the metropolis under the Act of 1869 having been completed, the result is a rateable value of about 30½ millions, showing an increase of about 1½ million during the last, as against an increase of nearly 3 millions in the previous five years, while the present smaller increase appears to have been chiefly made up by an extra charge upon railways and other public undertakings.

A new feature arose under the Act in the case of "The Parish of Fulham *v.* The Assessment Committee of St. Mary Abbots, Kensington," in which the outlying parish appealed against the assessment of the railways, public works, and other large buildings in the parish of Kensington, on the ground that they were inadequately charged, the parish thereby evading part of its fair contribution to the general rate. The result was that a compromise was effected; but, it being too late to increase the individual cases of assessment, the whole of the additional rate will have to be levied upon the ratepayers of the parish generally, those fully assessed having to contribute to make up the deficiency of the others until the next valuation takes place. This will necessitate in the future more care on the part of assessment committees, who will be well advised by calling in professional assistance.

The value of property in Liverpool, Manchester, and other provincial cities has also been affected to a greater or less degree by the depression which has been felt in commercial and trading circles.

The circumstances to which I have referred, combined with the absence of applications to Parliament in connexion with schemes for public undertakings, and a reluctance on the part of the public to subscribe towards carrying out those already sanctioned (notwithstanding payment of interest out of capital has been authorised), have rendered the past year specially unsatisfactory, not only to our own profession, but also to that of our Associates learned in the law, who are equally interested in anything affecting the welfare of the surveyor.

In the interest of all classes, most of all in that of the unemployed poor, it is desirable that the carrying out of public works should be facilitated by the removal of every unnecessary obstacle. Among these obstacles may be included the present arrangement, whereby promoters are compelled to undertake expensive inquiries before Committees both of the Lords and Commons. Some modifications are needed in this direction, possibly by substituting a single hearing before a joint Committee of both Houses for the present double inquiry, and by some inexpensive method of preventing purely factious opposition.

In Parliament matters relating to land have lately occupied and are destined apparently more than ever to hold a prominent position, although recent events have somewhat checked the more revolutionary proposals which had been suggested, and which need only be ventilated to be condemned. It is the duty of members of this Institution to watch the course of legislation, and use all means at their command to prevent the passing of impracticable and mischievous enactments.

On the motion of Mr. Thomas Huskinson, seconded by Mr. J. Shiress Will, Q.C., M.P. (Associate), a vote of thanks was given to Mr. Beadel for his address.

BUILDERS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

The thirty-ninth anniversary dinner in aid of the funds of this Institution was held (as briefly announced in our last, p. 684) on the 4th inst. at Carpenters' Hall, London Wall. Mr. Basil E. Peto, the President, occupied the chair, and was supported by Mr. E. I'Anson (President of the Royal Institute of British Architects), Mr. Kennard (Master of the Carpenters' Company), Sir Morton Peto, Bart., Alderman W. Lawrence, Mr. H. Colls, Mr. F. J. Dove, Mr. T. F. Rider, Mr. George Plucknett, J.P., Mr. Banister Fletcher, F.R.I.B.A., and other friends of the Institution.

The usual loyal and patriotic toasts were given by the chairman, Major Brutton replying for the "Army and Navy," and Major J. T. Bolding for the "Reserve Forces."

The Chairman, in proposing the toast of the evening, "Success to the Builders' Benevolent Institution," commended the charity to the hearty support of the trade. None of his hearers could have failed to have been struck, from time to time, by the fact that the ever-increasing keenness of competition, besides all its other evils, had unfortunately undermined the good fellowship which used to exist in trade by isolating them one from another. The old fellowship was shown in a hundred ways by the numerous trade societies which had their existence in the past, while nowadays there was seldom an opportunity afforded of uniting together for the good of even any portion of the trade. Such an opportunity as the present was, therefore, to be hailed with satisfaction. He supposed that, at the end of all, the business of most of them would seem but an unsatisfactory, unsocial, and even selfish affair, and were it not for such opportunities as the present perhaps some of their greatest successes might turn out to be but Pyrrhic victories after all. It should, therefore, be a matter of congratulation that they were enabled to make a united endeavour to do something for their less fortunate brethren. Men who had set out at the beginning of life with no greater ambition than honestly to support themselves, their wives, and families, were, as a rule, those whom the Institution helped, and who, when old age approached, in many cases found their trade and business gradually slipping away and going to their more successful competitors. It was in this spirit that the Institution was able to help such persons, and even to do something more, by showing that they were not forgotten and lost in the world, but still had the sympathy and kindly interest of those connected with their trade. The Institution during the year had lost a munificent supporter by the death of Lord Penrhyn, whilst, he regretted to say, there had been several defections of old subscribers to the charity. The interests of the Institution and its powers of usefulness depended entirely on the annual income being regularly maintained. From his point of view, indeed, donations were all very well; but if the regular income was not kept up the management did not know what to depend upon. He felt, therefore, he should not appeal to them in vain to fill up the gap that had been made in the annual subscriptions, and he would ask them to join him in drinking success to an Institution whose interests they all had so much at heart.

The Chairman also gave "The Health of the Carpenters' Company," who, besides granting the use of their fine Hall, had, by their munificence, greatly promoted the usefulness of the Institution. He coupled with the toast the name of Mr. Kennard, the Master.

Mr. Kennard, in replying, expressed the pleasure felt by the Carpenters' Company in granting the use of their Hall. When the Company was first formed, the carpenters were really the builders of London, inasmuch as the houses were then constructed of wood, but "the old order changeth," and bricks and mortar had taken its place. The great thing that brought about the change was probably the Fire of London, as from that time the Carpenters' Company ceased to exercise control over the London builders. The old rivalry between the builders and carpenters had, happily, long ceased to exist; and he hoped they would for many years continue to be the guests of the Carpenters' Company on these festive and charitable occasions.

Mr. Kennard next proposed "The Chairman and President." It must be a great satisfaction, he believed, to Sir Morton Peto, to have a son capable of presiding so ably at a gathering of this description.

The Chairman, in responding, expressed his pleasure at being able to do something for the Institution.

Mr. Banister Fletcher gave "The Vice-Presidents and Trustees," coupling the toast with the name of Sir Morton Peto, Bart., who thirty-three years since occupied the chair so well filled by his son that evening.

Sir Morton Peto, in replying, dwelt upon the great changes that had come to pass in the building trade. In the struggle for "the survival of the fittest" that Institution commended itself specially to their liberality. They used to imagine things were difficult in his day, when only five or six firms were invited to compete for a large work, but nowadays it must be a harder struggle still. Inasmuch as there were many of their brethren who had not marched with the times, who had not recognised the new order of things, and who had, therefore, fallen by the way-side, their business that evening should be to give succour to such as had been unfortunate in the battle of life.

Alderman William Lawrence proposed "The Treasurer" (Mr. George Plucknett, J.P.). It seemed like old times to see Mr. Plucknett at these dinners, reminding him of the days when the Pipers, the Lucases, the Cubitts, and the Petos used to meet, and even then complain of the severeness of the struggle.

Mr. Plucknett replied, and referred to the fact that the Institution had now been established for about forty years, during which time it had continued to progress satisfactorily. The pensioners had largely increased in number, and their stipends had also been considerably augmented. He had always regretted that many of the new firms established in London did not subscribe to the Institution, and he hoped they would do so in future. He would also like to add that Sir Morton Peto, when President thirty-three years ago, was the largest contributor the Institution had ever had.

Mr. T. F. Rider gave "The Architects and Surveyors." The architectural profession of London, he said, was a body of intelligent and worthy gentlemen, whom it was an honour to meet and a pleasure to be connected with in business. They had with them that evening the President of the Royal Institute of British Architects, whose name was a household word both in the profession and in the trade. The quantity-surveyors, again, were gentlemen who performed a more prosaic work, and who acted as buffers between the architect and the builder. He coupled with the toast the names of Mr. E. I'Anson and Mr. A. J. Hunt.

Mr. I'Anson expressed the deep interest he felt in the welfare of the Institution. It seemed to him that no work required so much organisation, with such mastery of detail and control over financial matters, as that of the builder.

The architect's work was also laborious and anxious, and he believed he might say for the great body of his profession that in all their dealings they endeavoured to do what was just and fair for the builders, as well as right for their clients.

Mr. A. J. Hunt, who also responded, said that the province of the surveyor was somewhere between that of the architect and the builder. In that province he trusted the surveyors would always hold their own, and not be swayed either by any exaggerated claims on the part of the builders or by parsimony on that of the architects or their clients.

Mr. E. Woodthorpe gave the concluding toast "The Committee and Stewards," which was responded to by Messrs. T. G. Smith and J. W. Hobbs.

In the course of the evening subscriptions and donations amounting to 678*l.* were announced.

ARCHITECTURAL ASSOCIATION.

The second meeting of this Association for the present session was held at 9, Conduit-street, on the 5th inst., Mr. J. A. Gotch (President) in the chair.

The following gentlemen were elected members of the Association, viz.:—Messrs. C. S. Haywood, E. H. Dawson, S. C. Baker, Harry Sanders, R. M. Hammond, Ernest Wyon, John Andrews, A. H. Noble, A. C. Smart, H. St. John Knight, L. J. Kempster, W. J. Martin, J. H. Jacques, H. J. C. Cordeau, W. F. Marshall, Paul Foucard, T. B. Pemberton, A. W. Jarvis, F. L. Sealy, Abraham Mosley, W. Jane, Andrew Ford, Henry Waterson, T. W. Gray, E. A. Nott, W. A. Lewis, E. R. Barrow, H. A. Woodington, G. F. Terry, S. R. Greenslade, James Ellwood, A. H. Pearce, Harry Berry, L. J. Veit, G. F. Collinson, H. V. Fanchester, Richard Hall, V. E. Young, W. C. Howgate, Henry Emerick, Arthur Rollins, J. S. D. Ahmedi, H. H. Fox, P. H. Currey, B. S. Wagstaff, H. J. Leaming, J. W. Drewington, C. A. Garrett, T. H. Hall, J. A. S. Jones, F. Batchelor, A. McGarel-Hogg, J. A. Verini, F. A. Coles, R. S. Harrison, F. J. Jones, P. L. Forbes.

It was announced that Mr. J. L. Robinson, of Dublin, had presented several photographs of the last excursion; also three sheets of views, entitled "Three Days in France with a Camera." Mr. William White had also presented a paper on "Church Restoration." Votes of thanks were accorded to the donors.

Mr. John Slater next moved the formal adoption of the annual report, as contained in the "Brown Book."

This was seconded by Mr. S. F. Clarkson and agreed to *nem. con.*

Mr. Aston Webb then read a paper on "Pupilage," which we print on another page.

The Chairman, in opening the discussion, expressed the great interest with which he had listened to the paper, and his admiration of the spirit in which it had been conceived,—a spirit all should endeavour to imitate. They ought to realise distinctly that the way to obtain education in the architectural profession nowadays was by means of pupilage, and to resolve, therefore, to make use of their opportunities to the best of their ability, at the same time endeavouring to introduce improvements in the method of education. The progress made must depend very much upon what sort of office the pupil entered, because in many offices he was merely left to pick up what he could. The master should, however, take a very different view of the relationship which ought to exist between himself and his pupil, and should afford the latter every assistance in the way of advice. On the other hand, there were many careless pupils, and nothing could be more useless than to pour floods of advice into an inattentive ear. The shorter length of term was a distinct advantage, three years being quite sufficient for a pupil to be in one office, and for grounding him in the rudiments of his profession, while nothing could be so beneficial as a change of office and scene, where one could find different work, and that done in a different manner. If the business letters were accessible to the pupil, it would be of great advantage to him; but, on the other hand, he would have to be a person of considerable discretion, as things were sometimes written to an architect that were not pleasant reading. Tracing, if done intelligently, was undoubtedly a most instructive operation, and there was no more ready way of acquiring a practical knowledge of good drawing than by tracing. The suggestion as to keeping a common-place book was an excellent one. In the present day there was so much to learn, and the work of life was so complex and multifarious, that one man's memory was not enough to carry him through; it was, therefore, important to be able to lay one's hand on every bit of information required. Pupils in London had immense advantages compared with those who were brought up in the country. In a great many provincial towns there were no other members of the profession with whom to exchange confidences, and no work of great interest to be seen; while in London the pupil had everything at his fingers' ends, and ample opportunity for cementing advantageous friendships in the way mentioned by Mr. Webb. Then, again, in the course of the work at the office, difficulties of one kind or another were constantly cropping up, and becoming, as it were, the general property of those engaged there, and the pupil should thoroughly thrash out such subjects on his own account. For instance, if a case of dry-rot occurred, and was brought into the office, it would be well to go thoroughly into the subject of dry-rot for the time, and in this way information would be obtained on such points, which could not fail to prove highly useful in future years. Very few pupils would think of setting up after three years of office work; indeed, it would prove more advantageous to the country if they did so after thirty years' experience. If there should be any country pupils who read this paper, who found themselves in difficulties, and who could not get advice from their masters, they should write to any member of the Association's Committee of Advice, who would be glad to help them, even though they were not members.

Mr. R. Phené Spiers remarked that his life had been pretty well spent in giving advice, though he had not passed through the pupilage stage on which Mr. Webb had dwelt. His father, acting on the advice of one or two distinguished architects, decided that it would be better to send him to study in the École des Beaux Arts at Paris, so that on leaving King's College he went direct there, returning to England as an "improver." In other words, he had passed aside the pupilage stage, and had no cause to regret having done so. Mr. Webb seemed to have preferred to confine himself to the subject as if his hearers had already passed through the period of pupilage, and there was nothing more to be done. At the same time, there were one or two other considerations worth looking at, even if it were now too late for any members of the Association to profit by them. It was impossible to lay too great a stress on the importance of a good previous education, as many pupils were really articled before being in a position, by their age or knowledge, to understand what was done in the office. In compiling some statistics about twenty years ago, for a committee of the Institute, he found the number of pupils articled during a certain period averaged from sixty to seventy per cent., at an average age of seventeen, and for the average time of four years. Fourteen was at one time the age for being articled for seven years, and though at the commencement the pupil's education was somewhat incomplete, yet after being two years in the office, he would be better able to understand the work than if he had left school at sixteen. The speaker then dwelt upon the advantage to the pupil of studying for his profession at King's College preparatory to his being articled. A sort of Architectural College had been from time to time suggested, but he did not believe there was any more chance of such an institution being started by the Government than there was of their agreeing to the requests of the "Architectural Federation Committee." Mr. Webb had referred to the best way of making use of the means afforded by the Association, and the moment the young man availed himself of its advantages, he began to think for himself. The pupil had a perfect right also to copy anything he could in the office, during the time he was engaged there. There was no copyright there so far as he was concerned, and being a pupil he had a right to copy everything for the purpose of study. With regard to the Royal Academy, he wished to correct a slight error made by the Secretary of the Institute, who, in a letter to the *Times*, had said that some two years ago the Gold Medal of the Academy was given for a drawing of a building, which would fall to pieces if any one attempted to erect it, adding that it would be advisable for the Academy to have a Class of Construction. It must be remembered that the Academy was a school of design, and good design included construction. With regard to this special drawing it was most extraordinary, if Mr. White's remarks were correct, that its faults should have escaped not only the attention of the visitors and the critics, but of the other students of the Academy. Mr. Spiers concluded by proposing a vote of thanks to Mr. Aston Webb.

Mr. John Slater, B.A., in seconding the vote, said he agreed with the last speaker as to the great desirability of architectural students receiving a better education before entering an office. Until parents were convinced that as good an education was necessary for an architect as for the profession of the law, the status of the former would never be raised. As to an architectural college they did not know what might happen. He was the Secretary of the Committee on Education sitting upstairs, and he hoped before long they would be able to make a report which might do some good. They might also look to the City Guilds' Institute at Kensington, where there were good opportunities for teaching the constructional part of architecture. He agreed with Mr. Webb that pupils should not only be allowed to have the run of the office letters, but should also be taught to answer them. When dwelling upon the common-place book Mr. Webb had not mentioned the great desirability of cultivating a habit of accurate observation and of putting down things at the time. As a general rule, a young man should not be discouraged from following his *penchant* for any particular phase of work. Some men had skill in designing, others in sketching, and others again in the constructional parts of architecture; and though it was important to get a thorough knowledge of the profession and be able to do all its parts with more or less skill, yet a man would soon discover in what particular direction his own bent lay, which should be more especially cultivated. This was an age of specialists, and though much was to be said against them, yet the man who could do one part of his work extremely well was more likely to get on than the man who could do many parts of it, but only in a mediocre way. He could not too strongly insist upon the desirability of getting a knowledge of books, and the list given by the Institute was an extremely good one to select from, though no one who came for examination would be expected to get up the whole list.

Mr. Lawrence Harvey said he had been through two of the Continental schools, though not through a term of pupilage. He was of opinion that the system in London was not in any way inferior to the system adopted abroad, and he believed that with the slight improvements which were taking place it would be much superior to the Continental plan. The improvements must necessarily supplement what could be learned in the office, and the Association had done a great deal towards this end; so that probably in a year or two the pupils would be able in the evening to get that knowledge which was given in the foreign schools. He did not see why the work done in the Paris *ateliers* could not to some extent be done in English offices, and it would encourage masters to help their pupils were their names mentioned in connexion with those of their pupils who were successful in any of the Association's or Institute's competitions. In regard to sketching from memory, some people seemed to think it was a hard thing to do, but he had acquired the habit abroad without much difficulty. A great many people, again, read without deriving any benefit from their reading; he would therefore advise such persons when they had finished a chapter to write out from memory an account of what they had read. Referring to the Class of Masonry initiated by the Association, he intimated that the first class would commence on the Tuesday following, and the subsidiary class on the 14th of December. Those who wished to join the latter should give their names in the course of the week, as the necessary tools had to be ordered.

Mr. Sydney Vacher said he believed that Mr. Webb had given valuable advice to those who, having passed through the pupilage stage, might have occasion to take pupils themselves. The young man on his becoming a pupil should at

once join the Elementary Class of Design, and it would also be advisable to enter the Royal Academy at a later age than was generally the custom.

Mr. Arthur Baker recommended all pupils, after serving their articles, to go as assistant clerks of works, for there could be no better eye-opener to the young architect. It would also aid the pupil if, on getting hold of bills of quantities, he examined them carefully and kept a common-place book of prices. For himself, he had always entered the quantities in his own price-book, which he depended upon more than upon Laxton. Mr. Slater appeared to be in favour of specialists, but he (Mr. Vacher) considered that a one-sided man ought to be prepared to share his profits with somebody else who could make up for his own deficiencies.

Mr. H. O. Cresswell said he thought pupils could not start working for a Studentship too soon, and if a man were lucky enough to get the Association Studentship, he would probably follow by securing two or three others. Tracing appeared to be the chief bugbear of all the young men, but there was a great deal to be learned from it. There were two ways of tracing,—with the head and with the pen,—and if the pupil was merely doing the latter he would learn little or nothing. He agreed with Mr. Webb that a man should not worry himself about the Examination in Architecture for the first two or three years. It was far better to confine one's attention to one's own bent, and when the Examination came it would not be found so dreadful as its anticipation. Indeed, he hoped their experience in that respect would be as pleasant as his own; while, as to the number of books recommended in the Institute list, he could only say that he had not read them.

Mr. C. H. Brodie said that Mr. Webb's remarks were so good and just, both to the masters and pupils, that if they would only accept the advice that had been given, any acrimony or discussion would be out of the question. The pupil should certainly be afforded every opportunity of obtaining experience out of the office, and in some articles it was set forth that the young man should have a half-day weekly to visit buildings, or to do as he liked. Another good plan was that each pupil in an office should, more or less, have charge of one building, and learn everything connected with it, all communications referring to it passing through his hands. He agreed also that there was a great deal to be learned from tracing, and believed that Rivington's three volumes on Building Construction would be found even more useful than Gwilt's Encyclopædia.

Mr. Leonard Stokes said he considered that whether the pupil was engaged in a large or small office he could, if he liked, pick up knowledge every minute of the day.

Mr. F. T. W. Miller said that three persons were concerned in the matter of pupilage,—the parent, the architect, and the pupil himself,—though about the parent very little had been said. He did not know whether Mr. Webb's paper was likely to get into the hands of parents, but if so, it would have been well to have said something about the advisability of parents exercising more discretion as to the kind of architects with whom they put their sons. They were all familiar with the old advertisement of "a pupil wanted; premium expected," which might in many cases be taken to read,—"Premium wanted; pupil expected," for the pupil was often the secondary consideration. Mr. Webb had suggested that the pupil should be allowed to look at the letters, and generally to see the way in which his master carried on his business. He believed, however, that the pupil would often like to know something else, viz., how the master got his business.

Mr. Herbert Baker said he thought it was of the utmost importance that the young man should go as a clerk of works, thereby learning how details were actually carried out, and at the same time seeing what the workmen were like.

Mr. M. Clarke said he had observed that the Institute gave tickets to its members to inspect the various buildings abroad. Was it possible that the members of the Association could be supplied with similar tickets, enabling them to inspect buildings in course of erection?

Mr. H. D. Appleton (Hon. Sec.) replied that the "Brown Book" gave all particulars as to the arrangements made with the architects of buildings in progress, but unfortunately at present there were no buildings they could visit. In fact, architects were rather shy of granting the permission, and he was afraid they would not recognise anything like a general order from the Association.

Mr. W. R. Mallett said he believed that a little well-directed encouragement on the part of the master would go a long way to help the pupil.

The vote of thanks to Mr. Webb was then put, and carried by acclamation.

Mr. Aston Webb, in replying, said he had not dwelt upon the matter of general education because it was a little hard upon a man, after he had done a thing, to say that he ought to have done something different before he came into the profession. No doubt for those who could manage to have a University education first it would be an immense advantage before entering the office. The master should allow the pupil to attend a course of day lectures, but it must be so regulated that the pupil should get into business habits. As to the office letters, of course all architects received unpleasant communications occasionally, but it was an error to suppose that the pupils did not know their masters' little mistakes. The suggestion that the pupil should be trained to write letters was an admirable one. Mr. Harvey's suggestion that the master's name should be published with that of his successful pupil would lead to a man doing a great deal more than was possible in these days. The master who wished to do his duty would do it without this incentive. He agreed with Mr. Miller that the parents were sometimes extremely unfortunate in their choice of the masters with whom they placed their sons, but he did not see how this was to be remedied.

THE TYLERS' AND BRICKLAYERS' COMPANY.

By invitation of the Master and Wardens of this Company, a large number of the leading members of the building trade in and around the metropolis dined together at the Albion, Aldersgate-street, on Wednesday evening last. The Master for the present year is Mr. R. L. Curtis, principal of the firm of R. L. Curtis & Sons, quantity surveyors. (Mr. Curtis has, by the way, just been elected an Alderman of the newly-constituted Borough of West Ham.) The Upper Warden is Mr. Richard Moreland, jun.; the Renter Warden is Mr. Harry Mansfield, and the Clerk is Mr. Arthur Bird. The invitation of the Master and Wardens to Wednesday's banquet was accepted by about 110 gentlemen, including Mr. Richard Moreland, sen. (the Father of the Company), Col. Hughes, M.P.; Mr. Deputy Brass, Mr. George Burt, J.P. (Mowlem & Co.), Mr. H. H. Statham (Editor of the *Builder*), Mr. Herbert Bartlett (Perry & Co.), Mr. J. T. Chappell, Mr. George Dean (Smeed, Dean, & Co.), Mr. B. E. Nightingale, Mr. James Smith (T. Wontner Smith & Sons), Mr. Charles Bird, Mr. Samuel Bird, Mr. Walter Bird, Mr. W. S. Horner (Ashby & Horner), Mr. Thos. F. Rider, Mr. J. Howard Colls, Mr. Stanley George Bird, Mr. Douglas Fourdrinier, Mr. Mark Manley, Mr. James Greenwood (J. & J. Greenwood & Son), Mr. Joseph Randall (Kirk & Randall), Mr. J. B. Moreland, Mr. Thomas Patrick, Mr. Frank Morter, Mr. E. Lucas, Mr. W. Grellier, Mr. Charles Mansfield, Mr. Robert Downs, Mr. John Marsland, Mr. John Dudley (Sutton & Dudley), Mr. J. Atherton Latta (Atherton & Latta), Mr. Alfred Stoner, Mr. Thomas Stirling, Mr. H. F. Dickins, Mr. James Brown (Brown, Son, & Blomfield), Mr. Joseph Hill (Higgs & Hill), Mr. George Williams, Mr. William Shepherd, Mr. G. S. Pritchard, Mr. G. H. Trollope (Trollope & Sons), Mr. A. Kinninmont, Mr. J. A. Bartram, Mr. Josiah Jackson (J. Jackson & Co.), Mr. W. Scrivener, Mr. J. Parker (Patman & Fotheringham), and others. The usual loyal and patriotic toasts having been disposed of,

The Master proposed "The Building Trade and the Visitors," expressing his satisfaction at seeing so many representative men present. He said that perhaps the Tylers' and Bricklayers' Company was more closely identified with the building trade than any of the other City guilds, and would always be glad to be of service to the trade in any way. He also spoke of the onerous conditions under which the trade was carried on. Mr. Ex-sheriff Burt responded.

The other toasts included "The Worshipful Company of Tylers and Bricklayers, and the Master of the Company," proposed by Mr. Deputy Brass; "The Wardens and Auditors, and the Clerk of the Company," proposed by Mr. H. H. Statham, and replied to by Mr. Richard Moreland, junior, the Upper Warden; and "The Treasurer of the Almshouses" (Mr. Stanley G. Bird), proposed by Mr. H. F. Dickins, who mentioned that Mr. Bird was about to start on a visit to India, and in the name of the visitors wished him *bon voyage*. Mr. Bird, in replying, said that more than half of the limited income of the Tylers' and Bricklayers' Company was spent on the almshouses and their inmates. He defended the City guilds against the accusations made against them by Mr. Firth and others.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

On Saturday last the fourth annual session of this Association was held at Adam-street, Adelphi, the President of the Council, Mr. Geo. B. Jerram, A.-M. Inst. C.E., delivering the inaugural address to a large audience of members. In reviewing the work of the Association, the President admitted feeling disappointed at the little fruit which had so far attended their efforts to secure for "sanitation" an adequate share of the attention of the nation and its legislators. They had discussed much, and had brought forward many valuable practical proposals. At the close of the Health Exhibition many sound recommendations had been made, and great things had been promised. Something had been done, certainly. Two sanitary Acts had been passed, though they had unfortunately not been subsequently put into force by the Local Sanitary Authorities. They had still at their head their respected President, Mr. Chadwick, and they would, with him, still keep on working and hoping, without permitting themselves to be discouraged. Inspectors in increasing numbers were joining their ranks, and attending their meetings; the statesmen in office promised early attention to amendments in Local Government measures, and the head of the Government, who introduced one of the Acts recently passed, took great interest in the important subject of public health, as he had shown by his presence on the late Royal Commission on the Housing of the Poor. They were encouraged by such signs to feel that perhaps the time was not so very far off when their hopes and aspirations would be realised. With respect to one of the most important of the practical matters still demanding their attention, the question of examinations and certificates, the Chairman expressed an opinion that it was impossible that any man destitute of previous practical training could, by simply reading up, properly qualify himself to undertake a public office of the importance of the sanitary inspector's. An experiment of the kind which had been tried and failed had led to the establishment of the Government College at Cooper's Hill for the Indian Civil Service, and without desiring to make of the Association a trade union, they wanted to promote measures tending to the adoption of a system of training for sanitary inspectors, such as was always now exacted in the case of civil engineers, architects, and lawyers. Mr. Jerram then proceeded to deal in a practical way with the question of sanitary pipes, the methods and materials of their manufacture, and the modes of laying them in connexion with house-drainage. After a retrospective glance at the history of the earthenware drain-pipe, from the first patent taken out by William Edwards in 1725 to those for socketed pipes by Samuel Hill (1810) and Ch. Jacobs (1849), reference was made to a correspondence which had taken place in the *Builder* in 1885, and by which the question, long in dispute, as to when the first salt-glazed stoneware pipes were used, was finally settled. It was clear from that correspondence that, at the suggestion of Mr. Edwin Chadwick, who was, in 1843, engaged under a Royal Commission in taking evidence on the sanitary condition of the people, Mr. John Roe, of Norwood, gave the first order for glazed sanitary pipes to be made. Messrs. Doulton, Messrs. Stiff, Messrs. Cliff & Co., with Messrs. Wragg and the Boulthorpe Pipe Company, had produced, during the interval, many models of pipes made from Dorsetshire, Devonshire, Staffordshire, Yorkshire, and Leicestershire clays, specimens of which were on the table, together with models of pipes made at East Greenwich by the Imperial Stone Company, which gave promise in the

future of a very perfect conduit. Mr. Jerram recommended that the weight of pipes should be specified, as well as the other particulars, and that the thickness should not be less than one-tenth or one-twelfth of the diameter. They should be as highly glazed as possible, but care should be taken that the glaze should be proof against the acids and other chemical elements found in sewage. The common methods of jointing pipes were condemned. The joints must be made gas-tight. Stanford's water-tight joint, introduced in 1873, and the ground joint and "telescopic joint" successively introduced by Messrs. Doulton, were greatly in advance of the older joints. In concluding his paper, Mr. Jerram referred to and described the following as being among the most improved forms of joints:—Doulton's composite joint, self-adjusting joint, Pritchard's spigot joint, the Donaldson, the Jackson, and the Hassall joints, and one which had recently received great commendation, invented by Mr. Mawbey, Engineer to the Corporation of King's Lynn.

A vote of thanks was accorded to Mr. Jerram, on the motion of Mr. Hearne (Paddington Vestry) and supported by Messrs. Adams (Frome), Clarke (Barnet), Alexander (Shoreditch), Rains (St. George's-in-the-East), Middleweek (Kensington), Mr. Drake, Engineer of the Foundling Hospital; and Mr. Chamberlen (Hammersmith). The necessity for the closest supervision of the jointing and laying of pipes, the absence of legal means for compelling proper workmanship, and the desirability of giving to the metropolitan sanitary authorities the power of making by-laws which is possessed by provincial Local Boards, were among the principal points touched upon in the discussion.

ARCHITECTURAL SOCIETIES.

Northern Architectural Association. — The first meeting of this Association for the present session was held on Monday evening at the Old Castle, Newcastle, when the President, Mr. G. G. Hoskins, F.R.I.B.A., delivered an address. On the subject of architectural federation he said:—"Although a member of the Architectural Federation Committee, of which Mr. Edgar Farman is honorary secretary, I have refused to sign the form of declaration which proposes to admit into our ranks as architects local board surveyors and land surveyors. The framers of this document might have gone a little further, and included inspectors of nuisances. Unfortunately, our profession is at present one in which any man,—no matter how ignorant or how unqualified,—can enter, his diploma consisting simply of his door-plate, and his qualification the impudence with which he dubs himself 'architect'; and I for one will therefore welcome most cordially any scheme of federation which is likely to bring about a better state of things, and I believe that the true and proper solution of the difficulty,—a solution in which the interests of the profession and the status of its members will be best taken care of,—will result from the labours of the R.I.B.A. Federation Committee, upon which I have the honour of representing you."

Oxford Architectural and Historical Society.—The members of this Society recently paid a visit to the ruins of the Nunnery at Godstow, and Wolvercote Church. Mr. James Parker acted as *cicerone*, and illustrated his description of the Nunnery with a series of drawings. Allusion was made to the fact that in 1718 the Earl of Abingdon obtained Godstow from the Duke of Marlborough, and used some of the materials for Wytham Church. At Wolvercote the vicar gave an account of the principal objects of interest in the church, and he also referred to Toll Bridge.

THE BLOCK SYSTEM FOR WORKHOUSES.

SIR,—Mr. Snell's courteous letter in your last issue [p. 682] is perfectly satisfactory to me, except that he is in error in stating that the corridors at the Wandsworth and Clapham New Workhouse are *closed*. They are *open* corridors, and, so far as those leading from the "Aged" departments are concerned, it is found, in practice, that it will be necessary to close them in, otherwise one-half of the old folks will soon be in the Infirmary. The new Workhouse at Mitcham being for the Able-Bodied Poor only, this difficulty will not arise.

THOS. W. ALDWINCKLE.

AREA OF A SAXON CATHEDRAL.

SIR,—I noticed in your interesting article of last week ["Building Records of the Domesday Book," p. 653, *ante*], on the subject of Anglo-Saxon churches, a statement that there is no evidence of any church of large dimensions of that date, instancing the church at Bradford-on-Avon and the chapel at Deerhurst as examples of the usual small area covered by the builders of those days.

But at St. Aldhelm's Cathedral at Sherborne we have proof that churches of a much larger scale were sometimes erected.

At Sherborne, the Saxon western doorway of the north aisle exists entire as regards its jambs and imposts, and part of the arch, with the projecting moulding so frequently found all round arches or doorways of this date. On the south side there also exists the southern jambs of the Saxon arch or doorway, with a simpler projecting moulding (the northern jamb was removed by the Normans under Bishop Roger, who made use of the southern jamb for their wider archway).

In the centre of the nave was a great porch of the same date, of which the moulded plinths remain on the south side.

These details show that the width of the Cathedral was between 55 ft. and 60 ft.

There must have been arches or openings of some sort, forming nave and aisles. And as to the length,—the bones of the brothers of King Alfred were found in the eastern ambulatory, where history says they were buried. This gives us nearly 200 ft. for the Anglo-Saxon Cathedral in length, exclusive of the western porch, by nearly 60 ft. wide.

The west wall, in which these archways are, is only 2 ft. 6 in. thick, of rough rubble masonry.

R. HERBERT CARPENTER.

THE "ECCLESIOLA" IN DOMESDAY.

SIR,—Your query, "Of what dimensions could these little churches have been?" leads me to refer to a view I entertain that many so-called early Norman churches are enlargements of some pre-existing Saxon buildings. In some cases the respective outlines are clearly traceable,—for instance, Walmer, near Deal; but in most cases the earlier work is called Norman, because we have no standard by which to fix Saxon work.

In some cases I should call the primitive structure a mere shrine or oratory, where the existing parish church has absorbed and concealed or distorted the original plan.

Such, I think, is the case at Patricksbourne, near Canterbury, where the nucleus is most diminutive.

Some such idea may, I think, be formed of Barfreston, in the same locality, and also of St. Margaret's at Cliffe.

A. H.

The Student's Column.

STONE QUARRIES.—XX.

LIMESTONES (*continued*).

DOULTING QUARRIES.—The quarries in the Doulting freestone are geologically on the same level as those of Bath, viz., the Great Oolite, being situated near Shepton Mallet, in Somersetshire. There can be no doubt that it is one of the best limestones for building purposes, whilst the fact that tramways have been laid down to connect the different workings with a siding recently constructed by the Great Western Railway Company to communicate with their line at Cranmore Station, causes the carriage of the stone to be effected with economy.

The quarries are worked with an open face of about 25 ft., and there are two different kinds of stone, one being much finer in the grain than the other. The finer variety appears to be uniform in texture, and of a light yellow colour, and is known in some quarries in the district as the *Brambleditch* stone. The coarser kind has a rather high specific gravity, is tolerably crystalline in texture, and is of a very light brown colour. It averages from 3 ft. 6 in. to 4 ft. 6 in. in thickness.

Both are shelly oolites. Blocks are occasionally obtained from 20 ft. to 30 ft. in length, and we are informed that 23 tons have been raised in a single block. It must be remembered, however, that this size is abnormal. The published chemical analysis is derived from an average of two different samples, the two results having been almost identical. It is as follows:—

Carbonate of lime	95·89
Carbonate of magnesia	0·11
Alumina	0·79
Sesquioxide of iron	0·85
Silica	2·04
Water	0·32
	100·00

A glance at this analysis shows that the characteristic feature in the stone is the comparatively high percentage of silica, and the student is aware, by this time, of the value of this remark. The specific gravity ranges from 2·4 to 2·5, being the result of numerous observations. Its average power of absorption of water is stated to be 0·164 part of its bulk.

We are pleased to be able to give the results of the experiments as to its resistance to a gradually increased thrusting stress, both *on* and *against* the natural bed of the stone.* They were made by Mr. Kirkaldy, on eight different specimens, each being bedded against pieces of pine a quarter of an inch in thickness:—

Tested AGAINST *the bed.*

1.—6·04 × 6·05 = 36·54 super., height 6 in.
Cracked slightly..... 75,240 lb., or 2,097 lb. per sq. in.
Crushed ..... 89,180 lb., or 2,441 lb. per sq. in.

2.—6·04 × 6·02 = 36·36 super., height 12 in.
Crushed ..... 79,620 lb., or 2,189 lb. per sq. in

3.—6·03 × 6·02 = 36·30 super., height 18 in.
Crushed ..... 70,870 lb., or 1,952 lb. per sq. in.

4.—5·98 × 6·00 = 35·88 super., height 24 in.
Cracked slightly..... 62,270 lb., or 1,735 lb. per sq. in.
Crushed..... 65,890 lb., or 1,836 lb. per sq. in.

Tested ON *the bed.*

5.—5·98 × 6·00 = 35·88 super., height 6 in.
Crushed ..... 89,380 lb., or 2,490 lb. per sq. in.

6.—6·07 × 6·08 = 36·91 super., height 12 in.
Cracked slightly..... 69,240 lb., or 1,876 lb. per sq. in.
Crushed ..... 83,620 lb., or 2,265 lb. per sq. in.

7.—6·08 × 6·04 = 36·72 super., height 18 in.
Cracked slightly..... 72,770 lb., or 1,982 lb. per sq. in.
Crushed ..... 79,850 lb., or 2,174 lb. per sq. in.

8.—6·04 × 6·06 = 36·60 super., height 24 in.
Crushed ..... 77,045 lb., or 2,103 lb. per sq. in.

The stone has been quarried for several centuries, a notable example of its use being found at Glastonbury Abbey, built in the twelfth century, in the ruins of which mouldings of it are still preserved. Wells Cathedral, dating from the thirteenth century, was also built of this stone. Examples of edifices in which it has more recently been used are,—St. Benet's Church, Stepney; the Panorama, Westminster; No. 156, Cannon-street, E.C.; Christchurch, Merton, and Trinity Colleges, Oxford; new pinnacles at Exeter Cathedral; Truro Cathedral; new nave of Bristol Cathedral; Llandaff Cathedral; and it is now being used in the construction of St. Peter's Church, St. Leonard's; Corpus Christi College, Oxford; the Town-hall, Minehead; Mont Doré, Bournemouth, &c.

Large quarries in these lower Oolites exist at *Stinchcombe* and *Minchinhampton*, near Stroud; *Charlbury*, near Oxford, where the stone only contains from 83 to 91 per cent. of carbonate of lime—this latter was used in the Oxford barracks; *Tainton*, near Burford, Oxfordshire, of a variable brown colour, absorbs much water (used in the interior of St. Paul's Cathedral, Blenheim House, &c.). There are several quarries near Yeovil, where the stone is a greenish grey and brownish yellow colour, which, besides supplying many buildings in the neighbourhood with a good material, was largely used for bridges over the Worcester, Shropshire, and Wolverhampton Railway.

Inferior Oolite Stones.

The quarries in this stone are chiefly situated in the Cotteswold Hills, Gloucestershire. The principal ones are at Bourton, Broadway, Brockhampton, Cleve Cloud, Guiting, Loughborough, Painswick Hill, Sheepscomb Hill, Stanway Hill, and Syreford. The general section at Leckhampton Hill shows that there are two principal kinds of stone used†:—1. The *Upper Freestone*, which is a white or light yellow oolitic limestone, used for ordinary buildings. It is about 34 ft. thick. 2. The *Lower Freestone*, which is fine-grained, compact, and oolitic, varying in colour from white to light yellow. The upper portion of this is stated to form the best building stone, and has been very extensively quarried, being a little more than 30 ft. in thickness. The lower part is coarser and more variable in texture and hence is more rarely quarried.

* See the *Builder*, vol. xxx. (1872), p. 8.
† See "Geol. of Cheltenham," Mem. Geol. Surv., 1857, and Quart. Journ. Geol. Soc., vol. vi. (185), p. 250.

This part of the series is 75 ft. thick, being locally known by the name of "roestone." Ferruginous beds of coarse oolite underlie this, which, in its turn, rests on a "pisolite" (or peagrit). Professor Hull makes the thickness of the workable part of the lower freestone 147 ft.* He also states that the stone from Painswick approaches in texture the Caen stone of Normandy. The presence of this oolitic limestone has imparted a special character to the domestic architecture of the hilly districts, as contrasted with that of the plains, which are formed of Lias clay, and in which brick houses, set in wooden frameworks, abound.

We may mention that the *Painswick Quarries* are about three miles and a half from the nearest station,—Stroud, and five miles from Gloucester station, but it is proposed to make a branch to Painswick. The stone is mostly used for fonts, pulpits, reredoses, pillars, arches, &c. Examples may be seen in the reredos of Gloucester Cathedral; the Shire Hall at Gloucester, built about seventy years since; Painswick old church and chapel; police station at Stroud; and many large public buildings in the vicinity. It was also used in the Houses of Parliament.

The remainder of the quarries which we propose to describe in the inferior oolite, and which are situated chiefly in the counties of Lincoln, Rutland, and Northampton, were included in that division called "Great Oolite," until Professor Judd showed that they really belonged to that part of the series in which we have now included them. He shows that all these quarries are in the "Lincolnshire limestone."

Ancaster Quarries.—These are situated near Sleaford. The stone is creamy-white, pink, and brown in colour. The beds vary from 6 in. to 3 ft. in thickness, and the bottom bed of a brown colour is said to be the most durable, being known as the "weather" bed. Blocks from 3 to 5 tons may be raised from these beds. It is worked with comparative ease. Specific gravity of dry specimens, 2·182. Amount of absorption of water, 0·180 of its bulk. Chemical analysis:—

Silica	0·0
Carbonate of lime	93·59
Carbonate of magnesia	2·90
Iron, alumina	0·80
Water and loss	2·71
Bitumen (a trace)	—
	100·00

Crushing weight of 2 in. cubes, 83 cwt. It has been used at the Midland Hotel and Station, St. Pancras; St. Sepulchre's Church, Holborn Viaduct; St. Alban's Abbey restoration; Lincoln Cathedral; Brighton Aquarium; New Sessions House, Liverpool; New Masonic Hall, Dublin; and many public and private edifices in and around Lincoln and Grantham.

Barnack Mill Quarries.—These are near Stamford. It is a shelly oolite, of a whitish brown colour. The thickness of freestone is said to be 4 ft. and of common wall stone 6 ft., and the size of the blocks procurable, 30 ft.

The specific gravity of Barnack freestone is 2·090, amount of absorption of water 0·204, and crushing weight of 2 in. cubes, 65 cwt.

The chemical analysis is as follows:—

Silica	0·0
Carbonate of lime	93·4
Carbonate of magnesia	3·8
Iron, alumina	1·3
Water and loss	1·5
Bitumen (a trace)	—
	100·0

It has been chiefly worked since 1835, when the quarries were opened in close proximity to some old workings. The following buildings have been constructed with the Barnack Mill stone:—Burleigh House, Peterborough Cathedral, Croyland Abbey, and several churches in Lincolnshire and Cambridge.

Ketton Quarries.—These are near Stamford. The stone is an oolite of a dark cream colour; the little spherules are of a moderate size, slightly cemented by carbonate of lime. The workable bed of stone is said to be 4 ft. thick and to form, sometimes one, and at other times two courses, and the size of the blocks that can be procured is said to reach 100 ft.† The Commissioners' Report shows that the "Rag beds" (which lie above the freestone) are of a white tint, and the grains are cemented with highly crystalline carbonate of lime; the "Crash" (above the Rag) is of a dark brown colour, very coarse, very ferruginous, and full of shells. Many quarries in the neighbourhood have now ceased working.

The specific gravity of the Ketton freestone is 2·045, rag 2·490. Absorbent power,—freestone 0·244, rag 0·075. This is a good illustration of the difference caused by the state of the cementing material; in both the freestone and the rag, it is of carbonate of lime, but whilst the former is earthy, the latter is more crystalline, and consequently less absorbent. We see also the very great difference caused in the "crushing-weights" from the same cause. The "crushing-weight" for Ketton rag is stated by the Commissioners to be higher than that of any other stone reported upon; 321 cwt. was required to crush a 2 in. cube of it, whilst a similar cube of the freestone required 91 cwt. only.

The following is the chemical analysis:—

Silica	0·00
Carbonate of lime	92·17
Carbonate of magnesia	4·10
Iron, alumina	0·90
Water and loss	2·83
Bitumen (a trace)	—
	100·00

The Ketton stone has been used in St. Dunstan's Church, Fleet-street; the modern works in Peterborough and Ely Cathedrals, &c.

Haydor Quarries.—These are near Grantham. The stone is of a brownish-cream colour. Its specific gravity is 2·040, and absorbent power 0·241. Large blocks can be raised, a very essential point to observe being that the stone should be set upon its natural bed. It has been used in Lincoln Cathedral, Boston, Grantham, and Newark parish churches; Culverthorpe House and Belvoir Castle.*

Kentish Rag is a hard siliceous limestone from the Hythe beds of the lower greensand formation, where it is associated with a soft calcareous sandstone, known locally as "hassock." The rag stone is extensively used in the south-eastern parts of England. The student will find an excellent work on this material by J. Whichcord, entitled "Observations on Kentish Ragstone." From this the following is chiefly derived.

The *Ragstone* varies from 6 in. to 3 ft. in thickness, as shown by the various quarries near Maidstone, Aylesford, and Boughton. It is a compact heavy stone, and absorbs but little water, and resists the weather well. It is used chiefly for rubble work (being very difficult to dress), paving setts, curbs, and ashlar. The ragstone is not suitable for internal work, as, being non-absorbent to a great extent, the moisture of the air condenses upon its surface, causing what is known as sweating. On exposure to the weather, it generally shows that iron is present, whilst it is important to observe that little patches of iron do not occur on the exposed face.

The *Hassock* alternates with the rag, and is compact enough in places to be quarried, being frequently used as a lining to walls built of ragstone.

Totternhoe Stone has been largely quarried in many places, chiefly in Cambridgeshire. It has been largely used in the construction of many of the old churches in that county, and, being easily cut and carved, it does fairly well for some interior work. Great care must be exercised in its selection if used externally, and we need hardly mention that it would only be fit for country residences.

It occurs, geologically, above the chalk marl, and is, in fact, a compact sandy chalk of a light greyish brown or buff colour. At Burwell, Cambs., where there are large quarries, the lower portion of the rock is only used for inside work, but the upper part, or "bond," if properly dried, becomes very hard, and is said to make a good building stone.† A cubic foot of it is calculated to weigh 1 cwt.

The following is an analysis of a specimen of Totternhoe stone from Burwell, by Dr. Frankland, F.R.S.:

Composition in 100 parts,

Moisture at 100 degrees	0·66
Alumina	0·53
Sesquioxide of iron (partly protoxide)	0·38
Calcic carbonate	85·91
Magnesic carbonate, trace	—
	87·78
Insoluble residue (clay).	
Silica	8·5
Alumina and protoxide of iron	0·32 1·19
Lime	0·28
Magnesia	0·29
Organic matter	0·44
	11·02
Total	98·80

The stone has been used in Dunstable Priory, Fonthill House, Woburn Abbey, and in other edifices.

The *Carboniferous Limestone* produces good building material, and is quarried for that purpose locally, especially in Yorkshire and Derbyshire. That from the *Hopton Wood Quarry*, near Wirksworth, Derbyshire, has also been used in London, in the construction of Belvoir Castle, and at Chatsworth. This limestone, however, produces in almost every district where it is worked the most beautiful marbles, and the Hopton quarry is justly celebrated for them.

* Hull's "Build. and Ornam. Stones," p. 207.
† See Judd's "Geol. of Rutland, &c." (1875), p. 189.

* Gwilt, "Encyc. Arch." p. 468.
† See "Geol. of Neighbourhood of Cambridge," Mem. Geol. Surv., p. 46.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

10,292, Ornamental Ironwork. K. L. Gocht (Chemnitz).

The object of this invention is to facilitate the use of iron in the building trades. The ornamental iron, in one or more pieces screwed or riveted together, is secured by nails driven through the material to which it is to be fastened with the ends of the iron, which are specially prepared to receive them,—for instance, as when an iron pattern overlays a wooden beam. The ends of the nail or fastening are deflected by nicks or serrations in the iron, and are thus made to form a hook or staple by which the iron is more securely fixed.

12,508, Water-closet Cistern. A. Kerr.

A small cistern is fitted inside the supply-cistern, and the superiority claimed for it is that it remains empty only when in action, and is thereby proof against frost, and is a waste-water preventer. On moving the lever the inside cistern cants and delivers its supply, returning by the action of withdrawing the lever or connexion causing the initial movement.

15,044, Room Doors and Doorways. D. Gill.

The object is to isolate the air of the rooms from that contained in the passages and staircases in dwelling-houses, and to prevent the entry of air from such sources, providing, at the same time, for admission of warm or medicated air, or air charged with disinfectants. A hollow space is formed in the lower part of the door on the room side, fitted with a door or valve, which can be opened or closed at will. This hollow space is connected with an under groove by passages or inlets made thereto. At the rear of this door or valve a grating is fixed, in front of which is a flap or loose piece of silk or other suitable material. A similar hollow space is formed in the lintel, which is also connected with grooves for the regulation and admission of air. As the door is opened and closed a valve fixed at one end of the air-passages or grooves opens and shuts, while the admission of air through any other aperture is, at the same time, cut off.

8,556, Improved Brace-bit. A. Price.

This bit is designed for boring round holes with the bottoms of the holes quite level, without either the usual indentations made by a point or screw in the centre or cutter marks round the circumference. The bit is made of steel or suitable metal, in the form of a hollow tube, with a cutter or cutters extending from the outside to the centre, the cutting edge projecting from the end of the tube the thickness of the shaving to be taken. The waste wood, when using the bit, passes up the tube to an outlet provided for its exit.

10,915, Parquetry. C. Gärtner (Hamburg).

This invention consists in so shaping and fixing the various pieces that no glue is required, and so that the nails and screws used are not visible on the finished parquetry. The squares, or pieces of which the parquetry consists, are fixed in a peculiar manner by means of flanged fillets or lists, these last being nailed to the flooring and covered by other pieces of parquet, so that the heads of the nails are not seen. The shrinkage or expansion of the floor has no influence on the parquetry, and woods of various degrees of hardness may be used.

NEW APPLICATIONS FOR PATENTS.

Oct. 29.—13,879, J. Craig, Combined Latch and Lock.—13,898, J. Bower, Step Ladders.

Oct. 30.—13,937, E. Taylor, Attaching Door-knobs or Handles to Spindles.—13,944, W. Macvitie and Others, Adjusting Door-knobs and Handles to Spindles.—13,953, M. Macleod, Sash Fastener, Guard, or Check.—13,959, J. Howie and T. Groves, Open Kilns.—13,964, J. Watson, Silica Brick.—13,984, W. Lindsay, Moulding Bricks or Blocks.

Nov. 1.—14,010, J. Fenby, Stop Joint or Hinge.—14,011, J. Buckland, Spindle for Locks, &c.—14,015, W. Bagshawe, Iron Roofs.—14,045, W. Granville, Electric Bells and Indicators.

Nov. 2.—14,054, F. Mory and R. Westley, Paint Brushes.—14,058, T. Messenger, Boilers for Warming Buildings.—14,071, W. Elliss, Spring Bolt for Securing Doors and Windows.

Nov. 3.—14,124, C. Turner, Tubular Springs for Doors.—14,126, D. Wilkins, Chimney Tops.—14,128, P. Walker, Ventilating.—14,146, W. Bevan, Sash Fastener.—14,168, L. Dove and J. Bush, Sash Fastener.

Nov. 4.—14,206, R. Lee, Window Fastenings.—14,223, J. Tall, Concrete Wall Construction.

PROVISIONAL SPECIFICATIONS ACCEPTED.

10,981, W. Moseley, Electric Bells.—11,086, J. Gsottbauer, Portable Buildings.—11,171, C. Mapleson and W. Rolls, Monumental Slabs, &c.—11,350, J. Hall, Ejector Ventilator.—11,460, T. Robson, Window Frames and Balancing Sashes.—11,483, C. Groombridge and J. Rickman, Window-sash Fastenings.—11,561, W. Gibbons and W. Sabell, Window-sash Fasteners. — 11,607, R. Lindsay, Fastenings for Window-sashes.—11,924, W. Adkins, Window-sash Fasteners.—12,205, H. Buchan, Plug-valves for Water-closets.—12,330, J. Tylor, Waste-preventing Cisterns for Water-closets.—12,373, G. Wishart, Ventilating and Chimney-cowls.—12,597, H. Treasure, Lock-up Ventilators for Buildings.—13,209, W. Lutwyche, Producing Mosaic.—11,859, T. Smith, Fastener for Holding Windows, Casements, Doors, &c.—12,028, A. Harrison, Ventilator and Chimney Cowls.—12,161, G. Austen, Covers for Brick-stacks. — 12,230, R. Chanony, Movable Elbow-rest for Balconies, &c.—12,358, O. Whitaker and W. Schofield, Flushing Water-closets, &c.—12,749, J. Morris, Chimney Pots or Cowls.—12,889, H. Obbard, Chimneys and Chimney Tops or Caps.—12,938, J. Mullen, Shooting Planes.—13,033, M. Heighley, Syphon-flushing Cisterns.—13,395, F. Sage, Protectors or Guards for Shop-windows, &c.—13,426, F. Baker, Chandeliers and Gaseliers.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

16,012, J. Kenyon and J. Coulong, Water-closets.—364, J. Hyde, Sash-fasteners.—11,875, J. Tonge, Automatic Flushing Apparatus.—14,707, M. Chaboche, Stove or Fireplace.—15, M. Golightly, Turn Button or Fastener for Doors, &c.—215, C. Homer, Window-sash Fasteners.—12,539, E. Allam, Decoration of Wrought-iron Girders.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

OCTOBER 25.

By REYNOLDS & EASON.

Hendon, Church End-road—Seven freehold cottages	£500
Rose and Honeysuckle Cottages, freehold	600
Ground-rent of 3*l.* 15*s.* a year, reversion in 96 years	75

OCTOBER 30.

By D. SMITH, SON, & OAKLEY.

Colchester—The freehold Silk Mills, stabling, &c., and four cottages	3,500
Nayland, Suffolk—Freehold silk mill and cottage	250
Tiptree, Essex—The freehold factory, and plot of Land	170

NOVEMBER 1.

By GRAVES & SON.

Bayswater—12, Shrewsbury-road, 69 years, ground-rent 8*l.*	680

By WEATHERALL & GREEN.

West Hampstead—9, Broadhurst-gardens, 79 years, no ground-rent	1,470
Islington—13 and 14, Bryan-place, 57 years, ground-rent, 2*l.*	720
Merton, Cavendish-road—A plot of freehold land	115

By ROBINSON & FISHER.

Lancing, Sussex—Freehold farm, and 36*a.* 2*r.* 35*p.*	4,000
Two Plots of land, 4*a.* 1*r.* 32*p.*	500

NOVEMBER 2.

By GEO. GOULDSMITH, SON, & CO.

Belgravia—26, Chester-street, 36 years, ground-rent 28*l.* 15*s.*	2,675
26, Eccleston-street, 37 years, ground-rent 15*l.*	2,180
Stoke Newington—15 and 21, Winston-road, 74 years, ground-rent 15*l.*	575
25, Lidfield-road, 74 years, ground-rent 5*l.* 5*s.*	235

By F. JOLLY & CO.

Bethnal Green—10, Pereira-street, 46 years, ground-rent 4*l.*	140
Plaistow—89 and 91, Pelly-road, freehold	410

By S. HERRICK.

Kingston—An enclosure of fruit land, 1*a* 3*r.* 20*p.*, freehold	1,060

By DEBENHAM, TEWSON, & CO.

Clapham—331 to 341 odd, Clapham-road, freehold, reversion to rack rents in four years	9,800
South Kensington—93, Philbeach-gardens, 89 years, ground-rent 20*l.*	1,650
Hatton Garden—10, Cross-street, freehold	1,125
Clapton—32, 33, and 34, Queensdown-road, freehold	1,680
Barking—18 to 28 even, James street, freehold	660
7, Chesterton-crescent, freehold	280

NOVEMBER 3.

By E. & S. SMITH.

Clerkenwell—Improved ground-rent of 135*l.*, with reversion in 8 years to rack rents for 22 years	2,280
16 and 17, Tysoe-street, 29 years, ground-rent 8*l.*	1,230
Kingsland—30, King Henry-street, 39 years, ground-rent 4*l.*	430

By W. A. BLAKEMORE.

Westminster — 1 to 13, Hugh-place, 14 years, ground-rent 32*l.* 10*s.*	830

By J. & W. JOHNSON & CO.

Old Kent-road—72 to 90, Lower Park-road, 27 years, ground-rent 51*l.* 15*s.*	£1,400

By WALKER & RUNTE.

Hackney—88, King Edward's-road, 43 years, ground-rent 9*l.*	600
Highbury—17 and 21, Pyrland-road, 63 years, ground-rent 16*l.* 18*s.*	930
Kingsland-road—An improved rental of £24 per annum	175
Homerton—Improved ground-rent of 10*l.*, term 66 years	165
Improved ground-rent of 36*l.* term 66 years	600
33 to 47 odd, Mehetabel-road, 66 years, ground-rent 14*l.* 10*s.*	1,975
Islington—9, River-street, 32 years, ground-rent 6*l.*	500
Croydon—1 and 2, Lansdowne-villas, freehold	600
Selhurst—1 and 2, Elsen-villas, freehold	250

By F. STOCKER.

Bermondsey—9 and 11, Longley-street, 53 years, ground-rent 10*l.*	750
36, Thorburn-square, 57 years, ground-rent 6*l.*	370
114, Alscot-road, 46 years, ground-rent 4*l.* 10*s.*	350

NOVEMBER 4.

By Messrs. CHADWICK.

Strand—26 and 28, Catherine-street, freehold	3,810
16 to 19, White Hart-street, freehold	3,600
Charing Cross—11, Upper St. Martin's-lane, 40 years, ground-rent 38*l.*	1,625
2 and 3, West Street, 8½ years, ground-rent 60*l.*	150
Brixton—88, Ackerman-road, 77 years, ground-rent 6*l.*	360

By T. R. MEAKIN.

Anerley—Ground-rent of 21*l.* 5*s.*, reversion in 247 years	480

By NEWSON & HARDING.

Islington—90, High-street, freehold	1,120
Clerkenwell—6, Rydon-crescent, 43 years, ground-rent 10*l.* 10*s.*	575
Holloway—24, 26, and 28, Hornsey-road, freehold	840
1, 3, and 5, Brand-street, freehold	610
West Brompton—18, Richmond-place, 57 years, ground-rent 3*l.*	350

By T. B. WESTACOTT.

West Norwood—Ground-rent of 6*l.* 6*s.*, reversion in 76 years	125
1 to 7 odd, Rommany-road, freehold	760
98, Woodland-road, 73 years, ground-rent 6*l.* 8*s.*	145

NOVEMBER 5.

By Messrs. CRONK.

Kensington—14, Kensington Palace-gardens, 56 years, ground-rent 75*l.*	8,100

By NORTON, TRIST, WATNEY, & CO.

Hammersmith—26, Elm-grove, 53 years, ground-rent 5*l.*	250

By Mr. GAIGER.

East Dulwich—1 and 2, Wingfield-villas, 88 years, ground-rent 6*l.*	380
Hendon—19 and 20, Sunningfields-road, 92 years, ground-rent 21*l.*	1,240

By W. B. HALLETT.

Clerkenwell—18 and 19, St. John's-square, freehold	3,400
38, Red Lion-street, Freehold	490
12, Myddleton-street, 17 years, ground-rent 6*l.* 10*s.*	240
1, Plumber's-place, 2 years, ground-rent 4*l.* 10*s.*	13
3 and 4, Jerusalem-passage, 5 years, ground-rent 61*l.*	50
Ground-rent of 32*l.* 16*s.*, term 29 years	385
Charlton—17, Joseph-street, freehold	150
Covent Garden—37, Hart-street, freehold	950
Lambeth—Improved ground-rent of 28*l.* 6*s.* 8*d.*, term 32 years	400
Pentonville—Ground-rent of 28*l.*, term 25 years	370
Stepney—Ground-rent of 42*l.*, term 40 years	620
Clerkenwell—1, St. Helena-place, 29 years, ground-rent 6*l.*	195

MEETINGS.

MONDAY, NOVEMBER 15.

Royal Institute of British Architects.—Monsieur Paul Sédille, of Paris, will read a paper entitled "*Etude sur la Renaissance de la Polychrôme Monumentale en France.*" 8 p.m.

TUESDAY, NOVEMBER 16.

Institution of Civil Engineers. — Six papers on "Concrete as applied in the Construction of Harbours at Quebec, Colombo, Newhaven, Wicklow, Fraserburgh, and Lowestoft," by Messrs. Kinipple, Kyle, Carey, Strype, Willet, and Laugley, MM. Inst C.E. 8 p.m.

Statistical Society.—Mr. James S. Jeans "On the Cost and the Conditions of Railway Traffic in Different Countries." 7·45 p.m.

Manchester Architectural Association.—Mr. William Parslow on "Lunatic Asylums." 7·30 p.m.

WEDNESDAY, NOVEMBER 17.

Society of Arts.—Opening Address of the Session, by Captain Douglas Galton, C.B., F.R.S., Chairman of the Council. 8 p.m.

British Archæological Association.—(1) Mr. Thomas Morgan will review the Darlington Congress. (2) Mr. C. Lynam on "The Saxon Church at Escombe." (3) Mr. E. Walford, M.A., on "Old Family Names at Darlington." 8 p.m.

Royal Meteorological Society.—Four papers, including one by Mr. Charles Harding, on "The Gale of October 15-16th, 1886, over the British Islands." 7 p.m.

FRIDAY, NOVEMBER 19.

Architectural Association. — Mr. J. D. Sedding on "Church Planning." 7·30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. Arthur J. Russell on "Diamond-mining in Paraná, South Brazil." 7·30 p.m.

Colonial Institute. — The Papier-Mâché Company (formerly Bielefeld's) ask us to mention that the ceilings of the principal rooms in this building, as also the staircase and lobby, were executed in fibrous plaster by their firm. Mr. A. D. Dawnay also states that he supplied the constructional portion of the ironwork. We gave the list of tradesmen as furnished to us by the architects.

Miscellanea.

Liverpool Engineering Society. — The usual fortnightly meeting of this society was held at the Royal Institution, Liverpool, on Wednesday, November 3,—Mr. Coard S. Pain, President, in the chair. A paper by Mr. Ludwig Benjamin, M. Inst. N.A., entitled "The Practical Use of Stability Calculations," was read by the author. After a brief review of the development of stability calculations, the author, who has taken an active part in the investigations of that branch of science, dealt with the question why these calculations are not made use of in a larger degree by shipowners and masters. He pointed out that this was mainly due to three sources, and that it rested with three classes of men to improve upon the present state of things. Firstly, the naval architect, who, instead of giving the results of his calculations in a manner easily understood by those who are supposed to make use of them, adopts a system of curves and diagrams which captains and others cannot be expected to understand. The author proposes a tabulated form which could be understood without scientific knowledge, and which meets all the requirements. Secondly, the shipowner, who in the case of mixed cargoes, often adopts a system of stowage which renders it impossible for any guiding information to be given by the naval architect. Thirdly, the sailor, to whom a certain amount of blame must be attached for having so little confidence in the results of scientific investigation. The following papers are announced by the same society: Nov. 17, A Formula and Diagram for ascertaining the Resisting Power of Piles. Dec. 1, Address by the retiring President. Jan. 12, "The Flow of Water," by Mr. A. W. Brightmore.

Explosions in Coal Mines.—Mr. T. E. Thorpe, writing in last week's issue of *Nature*, says, "There can be very little doubt that such explosions are, in the main, caused by dust. The fact that fire-damp is not the only explosive agent which may be present in coal-mines is now generally recognised, but colliery managers and many mining engineers have, apparently, been slow to believe that dust itself may, under certain conditions, effect an explosion quite as violent in its character as the most formidable gas explosion of which we have any record. The Royal Commissioners appointed to inquire into accidents in mines reported that in their opinion it was well established that even when the air is quite free from fire-damp, an exceptionally inflammable coal-dust, in a very finely-divided and dry condition, and existing in abundance in the immediate vicinity of a blown-out shot, may, when raised by the shot, be ignited so readily and carry on the flame so rapidly, that it may produce explosive effects of a similar character to those caused by a gas explosion. Unless, therefore, mining engineers, or those immediately responsible for the working of collieries, can devise some satisfactory method of minimising the danger due to dust, they will be compelled before very long, in deference to public opinion, to renounce the practice of blasting by means of gunpowder, or by any other agent which causes a flame."

Archæological Discovery in Bavaria.—At Flonheim, near Worms, in Bavaria, a series of excavations have recently been carried out, which have resulted in some interesting archæological discoveries. These excavations took place in a spot where formerly an old church had stood, which is now only a field. The foundations remain. In the midst of these a number of graves of ancient date were encountered, containing the remains of apparently some princely persons and their families. One skeleton of a lady had a string of splendid pearls round the neck, each pearl being separated by little gold filigree beads; and on the breast a silver buckle, some gold filigree ornaments, a ball of cloudy topaz, a little silver chain, a bronze buckle, and a bone comb. In another grave, a bunch of keys of curious shape and some glass dice were discovered. One grave of special interest was that of an old man, on whose remains lay a great spear and a lance, and by whose right side were found a bronze key, a box of the same material containing a bone comb and a pair of bronze scissors, a bronze saucer and urn, an axe of strange shape, a sword, nine arrow-heads, a beautiful fibula of gilt bronze, a finger-ring of gold, and parts of a gilt chain. The excavations are being continued by the Archæological Society of Worms.

The Dangers of New Dwellings.—Recently Dr. H. Hülmann, a German authority on sanitation, gave a lecture at Halle on the dangers attending residence in new dwellings. The doctor pointed out that the chief dangers to occupants of new dwellings were:—The wetness of walls; the closeness of doors, windows, and floors; and the presence of hydrate of lime in the mortar, which, in old houses, has been transformed into carbonate of lime or silicate of lime. It was generally known, he stated, that the renewal of fresh air in dwellings, to a great extent, took place through the pores which exist in all dried walls and through the chinks and fissures caused by the shrinking of the wood in doors, windows, and floors. This renewal of air through pores is, at first, entirely absent in new houses, and is only complete when a house is two or three years old, as that is the period generally required for a wall to become perfectly dry; for as long as the pores are filled with water, no air can pass through them. Consequently, if air be not communicated in other ways, the atmosphere in the inhabited rooms of new dwellings must be bad, as it is deprived of oxygen, whilst carbonic acid and hydrogen are added to it with every breath of the occupants, and with every fire and light within. This deterioration of the atmosphere increases with inhabitation. The evil effects of living in new houses are wholly caused by the too great moisture in the walls. The stoppage of the passage of air through the pores in the walls generates the formation of fungi, and causes the former to remain cold, whereby the temperature in such rooms is greatly lowered. In order to avert these dangers, new houses, the Doctor said, ought to be left to dry completely before habitation, or the process executed by artificial means. In conclusion, he added that the transformation of hydrate of lime into carbonate of lime might be accelerated by placing burning charcoal in basins in closed rooms. In connexion therewith it may be mentioned that there is a law in force in Berlin under which the sanitary authorities may prohibit the occupation of new houses until nine months after their completion; and that in consequence of some recent investigations several leading authorities propose to abolish this law and enact another making a complete system of ventilation compulsory in all buildings.

Restoration of the Upsala and Lund Cathedrals. — The restoration of the old cathedrals of Upsala and Lund has for some time been in progress. It was the intention to restore the former to its appearance before its destruction by fire in 1702. As, however, the appearance of the cathedral was much changed from the original at that period, this plan will now be modified. This cathedral, one of the oldest in Sweden, was built in 1287 by Etienne de Bouvenil, a French architect, who had undertaken to make it similar to the cathedral of Notre Dame in Paris, then just finished. It appears from old seals that this was also done, but subsequent fires and restorations had the effect of spoiling its style. The architect who has charge of the restoration,—which will occupy some years,—is the Government architect, Herr Langlet. Of the important work of the restoration of the Cathedral of Lund, just finished, are the fresco paintings in the central dome. They represent the life of Christ from birth to death, and have been executed by Herr F. Thulin. The cost of the frescos is 2,500*l*.

Wood Carving in Norway.—As an *addendum* to our recent article on Scandinavian Art at the South Kensington Museum, it may be of interest to mention that the Museum of Arts and Industries of Christiania have established a school for wood carving in Lesjeskogen and one in Hardanger. The course of teaching lasts from November to May, tools and wood being supplied free, but all the articles finished, except those during the last month, become the property of the school. The number of pupils will be about twenty-five, the fee for six months' teaching 12s. 6d. This is the first time that State aid has been granted for teaching wood-carving in Norway, and it is hoped that the step may have the effect of reviving this ancient Scandinavian industry. The Museum has also caused a number of old-fashioned patterns of Norse wood-carving and sculpture, drawn by Herr W. S. Bergström, to be issued for the use of the schools and others who desire to prosecute this art.

The New Independent Church at Stand, near Manchester, has just been opened. The church is designed by Mr. J. P. Pritchett, of Darlington, and was illustrated in the *Builder* for December 19, 1885. It is in the Perpendicular style of Gothic, and comprises nave with aisles having entrance porches at the front, chancel with minister's vestry on one side, choir vestry and organ chamber over it on the other. The ground-floor is raised above the level of the churchyard, and a crypt is provided underneath for dryness and for the re-interment of those who had to be removed in making the enlargement of the building,—a roof of cement concrete and iron joists forming a complete separation between the crypt and the church. Externally is to be noted the total absence of buttresses, the churchyard being limited in area, and having graves close up to the walls. This absence of buttresses being a "fixed point," the architect had to rely upon the arrangement of his masses and size and design of his windows for effect; and the committee decided to abandon the old-fashioned chapel style, and to have nave and aisles, clearstory, chancel, and everything good that could be adopted from the Mediæval arrangement of the English church. The work has been superintended by the architect, assisted by Mr. Smirke as clerk of works, and the contractors were:—For mason's work, Mr. Thomas Beck, Matlock Bridge; slater's work, Mr. John Smith Radcliffe; carpenter's and joiner's, plasterer's and painter's works, Mr. John Allen, Radcliffe; plumber's work, Mr. Edward Hilton, Prestwich; glazier's work, Mr. W. H. Atkinson, Newcastle-on-Tyne; heating apparatus, Mr. Gibbs, Liverpool; wood block flooring, Mr. Lowe, Farnworth; art metal work, Messrs. Thomason, Birmingham.

Plan for Making Brussels a Seaport.—The Municipal Authorities of Brussels are at present negotiating with an English Syndicate for making that city a seaport. It is proposed to connect the capital with the sea by means of a canal 20·3 ft. in depth and wide enough to enable vessels of 2,000 or 3,000 tons burthen to reach the town. Another canal is to connect the capital with the Schelt, and thus with the Port of Antwerp. The port to be constructed at Brussels will be situated on the Plain of Montplaisir, in the suburb of Schaerbeck, and will hold twenty ships of 2,000 or 3,000 tons. There will also be constructed docks and warehouses, which will be connected by rail with the great coal-mines at Charleroi. For the reception of cereals a warehouse, 200 ft. long, 100 ft. wide, and 100 ft. high, will be built, provided with all modern appliances, whilst tanks, pumps, &c., for holding and discharging petroleum will also be erected. The cost of the whole scheme is estimated at 5,000,000*l*., for which the city of Brussels pays an annual sum from the day of the completion of the canal, beginning with 700,000*l*. the first year and continued as the receipts increase until the canal has become the property of the town. In the meanwhile the city will receive a share of the receipts. The King of the Belgians is much interested in this project, as he hopes to divert by it all the Continental trade of the Congo State to Belgium.

The Proposed Eiffel Tower, Paris.—The Paris correspondent of the *Daily News* telegraphs:—"M. Lockroy, as Chairman of the Committee of Management of the Universal Exhibition, has been served with a writ by the Comtesse de Poix, who demands that he shall cease from building the Eiffel Tower. The Countess some years ago bought ground of the City of Paris in the waste land near the Champs de Mars, and she and her tenants were in the deed of sale assured for ever the enjoyment of that open space as a pleasure ground. She holds that the building of the Eiffel Tower is not only a menace to her house, but that it will block up for many years the most agreeable part of the Champs de Mars, and the one in which she has been accustomed to take daily exercise. M. Alphand, the director of the city gardens, and M. Poubelle, the Prefect of the Seine, are also served with writs by Madame de Poix. A number of residents in the neighbourhood of the Champs de Mars feel as nervous as that lady about the high tower, which will be nearly ten times higher than the hill of Montmartre."

National Agricultural Hall.—We are informed that Messrs. Isler & Co. have been commissioned to fix their improved patent registering turnstiles at the National Agricultural Hall, Kensington.

The Enlargement of Aston Workhouse. The *Birmingham Gazette* says that the Aston Board of Guardians have held a special meeting for the purpose of selecting the plans for the proposed enlargement of the workhouse. A few months ago a number of Birmingham architects were invited to submit plans in competition for the following buildings:—A new block of imbecile wards to accommodate ninety male and ninety female inmates, an extension of the bakehouse and pantry to twice their present size, a new laundry, additional Board and committee room accommodation, and extension of the receiving wards and tramp wards and engine-house, additional water-tanks, as a protection against fire, and other minor alterations. The Guardians, in consultation with Messrs. Henley and Jenner Fust, Local Government Board Inspectors, have now selected the plans bearing the motto "Prudence," as being the best, and have appointed the authors of these plans (Messrs. John G. Dunn and F. W. Hipkiss, of Waterloo-street), architects for the new buildings. Messrs. Henley and Jenner Fust have recommended that new schools should be erected on some site at a considerable distance from the workhouse, and that the present schools should be utilised for the new imbecile wards.

Society of Arts.—A first meeting of the 133rd session of the Society of Arts will be held on Wednesday next, November 17, when the opening address will be delivered by Captain Douglas Galton, C.B., D.C.L., LL.D., F.R.S., Chairman of the Council. Previous to Christmas there will be four ordinary meetings, in addition to the opening meeting. The following are the probable arrangements for these meetings:—November 24, William Anderson, M. Inst. C.E., "Purification of Water by Agitation with Iron and Sand Filtration." December 1, adjourned discussion on the paper by Dr. C. Meymott Tidy, on "Sewage Disposal." (Read April 14, 1886.) December 8, Major-General C. E. Webber, R.E., C.B., "Glow Lamps, their use and manufacture." December 15, J. B. Marsh, "Cameo Cutting as an Occupation." There will be five courses of Cantor Lectures during the session:—(1) "Principles and Practice of Ornamental Design," by Lewis Foreman Day. (2) "Diseases of Plants, with special reference to Agriculture and Forestry," by T. L. W. Thudichum, M.D. (3) "Building Materials," by W. Y. Dent, F.C.S., F.I.C. (4) "Machines for Testing Materials, especially Iron and Steel," by Prof. W. C. Unwin. (5) "The Structure of Textile Fibres," by Dr. Frederick H. Bowman, F.L.S., F.G.S.

Cardiff.—The Plas-Newydd-square School-room or Mission-hall was opened on Sunday, the 31st ult. The building is in the Gothic style, of a plain character, and built of local stone, and Yorkshire dressings. The plan consists of a large hall, accommodating about 400, a large lecture-room or class-room, and minister's vestry. At present the building will be used as a chapel, but, when funds permit, a large chapel will be built on the adjoining ground, which is being retained for that purpose. The cost of the building is 950*l*. The builder is Mr. D. Thomas; and the work has been carried out from the designs and under the supervision of Mr. J. H. Phillips, architect, of Cardiff.

The Office of Superintending Architect, M.B.W.—A special meeting of this Board was convened on the 5th inst. to consider the questions of salary and age for this appointment, but owing to a member taking objection to the validity of the requisition calling the meeting, the Chairman ruled the requisition to be informal, and the Board adjourned. Judging by the reports of the proceedings at this meeting in some of the daily papers, the Board seems to be going from muddle to muddle in the matter of this appointment.

Fall of a Church Tower at Norwich.—On the evening of the 3rd inst. a great portion of the tower of the Church of St. Michael-at-Thorn, Norwich, fell down, seriously damaging the nave. It is stated that the tower had been for some time past in a shaky condition, and that its repair was "under consideration" at the time of the disaster.

The Mortgage Insurance Corporation (Limited).—The prospectus of this new company will be found in our advertising columns. The list of the directorate includes some good names. We understand that the *minimum* rate of premium they contemplate charging will be one-eighth per cent. per annum for first-class mortgage insurances.

Sheffield School of Art.—At the annual meeting of this school, held on the 8th inst., the report of Mr. J. T. Cook, head-master of the school, was presented. In the course of the report, Mr. Cook said:—"It is with considerable satisfaction that I draw your attention to another advance in the general results of the school. I am, however, afraid it will be for the last time, unless manufacturers agree to the suggestion I have so frequently made to them, viz., that they should require their apprentices to attend the school, or should offer to pay the whole or part of their fees; for whereas the general result of the school has been gradually increasing, the actual number of students attending has practically remained the same, and although this may be accounted for to some extent by the depression in trade, it, nevertheless, suggests that something should be done to remedy what must be a weakness." A large proportion of the students have received medals and prizes from the Science and Art Department, and six students went to London for examination, their expenses being defrayed by the Department, and five were successful. All the branches of the school have been well attended in comparison with former years. The wood-carving and chasing classes have both produced good work and obtained high awards.

PRICES CURRENT OF MATERIALS.

TIMBER.	£. s. d.	£. s. d.
Greenheart, B.G. ....ton	6 10 0	7 0 0
Teak, E.I. ....load	9 0 0	14 0 0
Sequois, U.S. ....foot cube	0 2 4	0 2 7
Ash, Canada ....load	3 0 0	4 10 0
Birch ,, ...	2 5 0	3 10 0
Elm ,, ...	3 10 0	4 10 0
Fir, Dantsic, &c.	1 10 0	4 0 0
Oak ,, ...	2 10 0	4 10 0
Canada	3 0 0	6 0 0
Pine, Canada red	2 0 0	3 10 0
,, yellow	2 5 0	4 0 0
Lath, Dantsic ....fathom	3 0 0	5 0 0
St. Petersburg	4 0 0	5 10 0
Wainscot, Riga ....log	2 15 0	4 0 0
,, Odessa, crown	3 5 0	3 7 6
Deals, Finland, 2nd and 1st...std.100	7 0 0	8 0 0
,, 4th and 3rd	6 0 0	6 10 0
Riga	5 10 0	7 0 0
St. Petersburg, 1st yellow	8 10 0	14 0 0
,, 2nd ,, ...	7 0 0	8 0 0
,, white	7 0 0	10 0 0
Swedish	6 0 0	15 0 0
White Sea	7 0 0	17 10 0
Canada, Pine, 1st	17 0 0	29 0 0
,, ,, 2nd	11 0 0	17 0 0
,, ,, 3rd, &c.	6 0 0	8 0 0
,, Spruce, 1st	8 0 0	11 0 0
,, ,, 3rd and 2nd	5 0 0	7 10 0
New Brunswick, &c.	5 0 0	7 0 0

TIMBER (*continued*).	£. s. d.	£. s. d.
Battens, all kinds	4 0 0	12 0 0
Flooring Boards, sq. 1 in., Prepared, first	0 9 0	0 13 0
Second	0 7 6	0 8 6
Other qualities	0 5 0	0 7 0
Cedar, Cuba ....foot	0 0 3	0 0 3½
Honduras, &c.	0 0 2½	0 0 3½
Australian	0 0 2	0 0 3
Mahogany, Cuba	0 0 4	0 0 7
St. Domingo, cargo average	0 0 4	0 0 7
Mexican ,, ...	0 0 3½	0 0 4½
Tobasco ,, ...	0 0 4	0 0 6½
Honduras ,, ...	0 0 4	0 0 6½
Maple, Bird's-eye	0 0 6	0 0 8
Rose, Rio ....ton	7 0 0	10 0 0
Bahia	6 0 0	10 0 0
Box, Turkey	5 0 0	17 0 0
Satin, St. Domingo ....foot	0 0 6	0 0 10
Porto Rico	0 0 7	0 1 0
Walnut, Italian	0 0 4	0 0 5
METALS.		
Iron—Pig, in Scotland....ton	0 0 0	0 0 0
Bar, Welsh, in London	4 7 6	4 15 0
,, ,, in Wales	4 2 6	4 7 6
,, Staffordshire, London	5 10 0	6 0 0
Sheets, single, in London	6 15 0	8 10 0
Hoops ,, ...	6 0 0	7 0 0
Nail-rods ,, ...	5 15 0	6 10 0
Copper—		
British, cake and ingot ....ton	44 0 0	45 0 0
Best selected	45 10 0	46 0 0
Sheets, strong	51 10 0	52 0 0
,, India	49 19 0	0 0 0
Australian	0 0 0	0 0 0
Chili, bars	40 7 6	40 15 0
Yellow Metal ....lb.	0 0 4	0 0 4½
Lead—		
Pig, Spanish ....ton	12 15 0	0 0 0
English, common brands....	13 0 0	0 0 0
Sheet, English	13 17 6	14 0 0
Spelter—		
Silesian, special ....ton	14 5 0	14 7 6
Ordinary brands....	14 2 6	14 5 0
Tin—		
Banca ....ton	0 0 0	0 0 0
Billiton	0 0 0	0 0 0
Straits	100 0 0	0 0 0
Australian	100 10 0	0 0 0
English ingots	104 0 0	0 0 0
Zinc—		
English sheet ....ton	0 0 0	0 0 0
OILS.		
Linseed ....ton	20 5 0	20 12 6
Cocoanut, Cochin	36 0 0	36 10 0
Ceylon	26 10 0	27 0 0
Copra	0 0 0	0 0 0
Palm, Lagos	23 10 0	24 0 0
Palm-nut Kernel	0 0 0	0 0 0
Rapeseed, English pale	22 5 0	0 0 0
,, brown	20 15 0	0 0 0
Cottonseed, refined	19 0 0	19 10 0
Tallow and Oleine	25 0 0	45 0 0
Lubricating, U.S.	6 0 0	10 0 0
,, refined	8 0 0	13 0 0
Turpentine—		
American, in casks ....cwt.	1 8 0	0 0 0
Tar—		
Stockholm ....barrel	0 15 0	0 15 6
Archangel	0 10 6	0 11 0

CONTRACTS AND PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Additional Stables, Willesden	L. & N. W. Rail. Co....	*Official*....	Nov. 17th	xviii.
Twenty-five Cottages, Rowsley	Midland Railway Co. ...	A. A. Langley	Nov. 18th	xviii.
Guernsey Granite Spalls....	Dartford Union	*Official*	Nov. 19th	xviii.
Post-Office and Residence, Stevenage....	....	M. Pickett....	Nov. 23rd	ii.
Making-up Roads	Wandsworth Bd. of Wks	*Official*	do.	ii.
Widening and Improving Bridge, &c.	Greenwich Bd. of Wks.	do.	Nov. 24th	ii.
Formation and Construction of Roads	Tunbridge Wells Lcl Bd	W. Brentnall....	Nov. 26th	ii.
Furnishing New Town-hall....	Barrow-in-Furness Cor.	*Official*	Dec. 4th	ii.
Sewage Precipitation Works, Barking Creek	Met. Board of Works...	do.	Jan. 7th	i.
Blue Guernsey Granite	Acton Local Board.....	C. N. Lailey	Not stated...	ii.
Erection of Public-House, Lower Thames-st.	....	W. S. Witherington.....	do.	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Fittings Inspector....	Oxford City Waterwrks	Not stated	Dec. 1st	xvi.

TENDERS.

BIRCHINGTON-ON-SEA.—For finishing two pairs of semi-detached villa residences in the Ethelbert-road, Minnies Bay, Birchington-on-Sea, for Mr. Alfred Hunter. Mr. Henry Bushell, surveyor, Finsbury-pavement. No quantities:—

Lidstone, Finsbury Park	£1,400 0 0
Booth, Hackney	1,287 0 0
Ridout, King's Cross	1,147 10 0
Church & Co., City	1,075 13 7
Waterman & Co., Thornton Heath...	987 0 0
Forwalk, Ramsgate	945 10 0
Dyke, Westgate-on-Sea*	927 0 0

* Accepted subject to certain modifications.

[Surveyor's estimate, 1,000*l.*]

BURNHAM (Essex).—For the construction of water works at Burnham, Essex, for the Maldon Union Rural Sanitary Authority. Mr. Alan Stewart, C.E., engineer:—

Bell, Tottenham	£2,268 13 5
Snow & Co., London	1,907 0 0
Boyd & MacKinlay, London....	1,861 18 6
Cowdery, Newent, Gloucester	1,614 0 0
Potter, Lower Clapton	1,530 0 0
Gibson, Southall	1,519 6 2
Diss, Colchester	1,507 7 10
Cook, Burnham	1,466 0 0
Lewis, Witham	1,445 16 6
Knight, Morden, Surrey	1,428 0 0
Pickthall, Yeovil	1,417 8 6
Hills, High Wycombe....	1,362 18 0
Innes & Wood, Handsworth....	1,360 17 10
Farrow, Chelmsford	1,360 0 0
Foster & Dickson, Rugby (accepted)	1,319 7 6

[Engineer's estimate, 1,363*l.*]

BARNET.—For making up the roads, for the East Barnet Valley Local Board:—

Station-road.

J. Pizzey, Hornsey	£2,892 0 0
B. Cooke & Co., Battersea	2,843 0 0
H. Treherne & Co., Battersea	2,757 0 0
Rowland Bros., Fenny Stratford....	2,708 0 0
J. Young, Skegness....	2,702 16 0
G. Capper, St. Alban's	2,600 0 0
J. Mowlem & Co., Milbank	2,522 0 0
R. Finnegan, Northampton	2,490 0 0
Nowell & Robson, Kensington*	2,425 0 0
W. Nicholls, Wood Green....	2,414 12 9
G. J. B. Marshall, Brighton....	2,280 0 0
Marriott Bros., High Barnet	2,220 0 0
T. Adams, Kingsland	2,050 0 0
J. Jackson, Enfield	1,989 18 0
J. Reeves, Walthamstow	1,968 0 0

* Accepted subject to the sanction of the Local Government Board.

East Barnet-road.

J. Pizzey	£2,997 0 0
J. Reeves	2,910 0 0
H. Treherne & Co.	2,904 0 0
G. Capper	2,750 0 0
J. Young	2,748 18 0
Marriott Bros.	2,589 0 0
Rowland Bros.	2,513 10 0
W. Nicholls	2,506 8 3
R. Finnegan	2,475 0 0
J. Mowlem & Co....	2,460 0 0
Nowell & Robson*	2,317 0 0
G. J. B. Marshall	2,280 0 0
T. Adams	2,197 0 0
J. Jackson	2,170 16 0

* Accepted subject to the sanction of the Local Government Board.

Kerbing and Channelling Ten Roads.

Rowland Bros.	£4,592 14 6
J. Pizzey....	3,072 16 0
H. Treherne & Co.	3,049 1 6
Marriott Bros.	2,923 16 0
R. Finnegan	2,873 17 5
J. Mowlem & Co....	2,792 9 10
J. Reeves	2,690 11 2
T. Adams	2,572 4 2
B. Cooke & Co....	2,555 0 0
G. Capper	2,500 0 0
Nowell & Robson*	2,496 0 0
G. J. B. Marshall....	2,465 3 6
W. Nicholls	2,324 18 3
J. Jackson	2,154 10 0

* Accepted subject to the sanction of the Local Government Board.

CAVERSHAM (Oxon.)—For new house and shop, Prospect-street, for Mr. N. Geen. Mr. William Wing, architect:—

Simonds	£778 0 0
Dodd	635 0 0
Brown	616 0 0
Wernham	440 0 0
Hutton, Caversham (accepted)	392 10 0

CAVERSHAM.—For additions to house for Mr. G. West. Mr. William Wing, architect. Quantities supplied:—

Grover, Reading (accepted)....	£180 0 0

CHISLEHURST.—For re-erecting stables at Tamarw, Chislehurst, for Mr. D. Clarkson. Messrs. T. Chatfeild Clark & Son, architects. Quantities by Messrs. Leonard & Clarke:—

Clarke & Bracey	£1,210 0 0
Morter....	1,198 0 0
H. J. Greenwood....	1,185 0 0
Colls & Son	1,176 0 0
Hall, Bedall, & Co.	1,143 0 0
Nightingale	1,125 0 0
Lawrence	1,080 0 0
Grover....	1,079 0 0
Money Marsland, Chislehurst*	1,078 0 0

* Accepted.

CHISWICK.—For sewer, Woodstock-road, for the Chiswick Local Board:—

Wilson	£500 0 0
Trehearne	503 0 0
Cooke & Co.	500 0 0
Saunders....	498 0 0
Iles	490 0 0
Nowell & Robson....	489 0 0
Ball....	433 0 0
Rhodes	422 0 0
Tomes & Wimpey (accepted)	354 0 0

FOREST GATE.—For four houses and shops in Vansittart-road, Forest Gate, for Mr. R. J. Ames. Mr. H. F. Simmonds, architect, Cambridge Heath:—

Blow & Co....	£2,595 0 0
Thomerson & Sons	2,030 0 0
G. W. Beale	1,995 0 0
Nicholls	1,596 0 0
Baker	1,589 0 0
Fuller	1,580 0 0
Hughes	1,518 0 0
Ling....	1,410 0 0
Burgin....	1,345 0 0
Simpson	1,175 0 0

HARROW-ON-THE-HILL. — For the erection of boundary walls, &c., in the Roxborough Park-road, Harrow, for Mr. F. S. Winkley. Mr. Joseph Gibson, surveyor, Cannon-street, City:—

Webb, Harrow....	£371 0 0
Batchelor, Harrow	365 0 0
Rowland Bros., Fenny Stratford	365 0 0
Sears, Harrow	335 0 0
Haines, Alperton....	310 0 0

[Surveyor's estimate, 366*l.* 15*s.* 3*d.*]

HENLEY-ON-THAMES. — For new mineral water factory at Henley brewery, for Messrs. W. H. Brakspear & Sons. Mr. William Wing, architect, Caversham, Oxon. Quantities supplied:—

J. Weyman	£1,280 0 0
A. W. Dodd	1,259 0 0
Holly & Butler, Nettlebed*	1,025 0 0

* Accepted.

HENLEY-ON-THAMES.—For new stabling and alterations to stable block at Henley brewery, for Messrs. W. Brakspear & Sons. Mr. William Wing, architect, Caversham. Quantities supplied:—

Holly & Butler	£315	0	0
J. Weyman, Henley (accepted)	314	0	0

LONDON.—For alterations to Nos. 26, 27, and 28, Warwick-street, for Messrs. Liberty. Mr. Arthur Vernon, architect:—

Hollands	£1,580	0	0
Hatfield	1,150	0	0
Bywater (accepted)	1,096	0	0

LONDON.—For alterations at the King's Arms, Aldersgate-street. Mr. E. A. Lewcock, architect, Bishopsgate-street Within:—

Ivory	£1,205	0	0
Jackson & Todd	839	0	0
Davison	738	0	0
Steel Bros.	720	0	0
Spencer & Co.	715	0	0
Stephenson	691	0	0
D. Brown & Co.	677	0	0

LONDON.—For decorative work and general repairs internally at No. 13, Portland-place, for Mr. W. Q. Orchardson, R.A. Mr. Charles F. Moxon, architect, Furnival's-inn. Mr. Henry Bushell, surveyor, Finsbury-pavement. No quantities:—

R. Fennings (accepted)	£435	0	0

[Surveyor's estimate, 434*l.* 8*s.* 6*d.*]

Sanitary Works.

R. Fennings	£319	0	0
Layton & Son	275	0	0
L. C. Roper (accepted)	272	0	0

[Surveyor's estimate, 267*l.* 10*s.*]

LONDON.—For alterations and repairs at 116, London-wall, for the Churchwardens of St. Stephen's, Coleman-street. Mr. J. E. Saunders, architect:—

Richardson & Son	£475	0	0
Clarke & Bracey	381	0	0
Colls & Sons	370	0	0
Heeps	357	0	0

LONDON.—For alteration to Nos. 148 and 150, Regent-street, for Messrs. Liberty & Co. Mr. Arthur Vernon, architect, Great George-street, Westminster:—

Hollands	£390	0	0
Hatfield	345	0	0
Bywater (accepted)	246	0	0

PUTNEY.—For the embankment of the River Thames (south side) from Putney New Bridge and Dock to the Beverley Brook, for the Wandsworth District Board of Works. Mr. J. C. Radford, C.E., architect:—

Williams, Son, & Wallington	£7,385	0	0
Geo. Munday & Sons	6,936	0	0
S. Chafen	6,559	0	0
B. Cooke & Co.	6,543	0	0
John Mowlem & Co.	6,500	0	0
Charles Killinback	6,250	0	0
George Neal	4,699	0	0
John Waddell & Sons (accepted)	4,690	0	0

[Surveyor's estimate, 4,952*l.*]

STOKE NEWINGTON.—For fittings at No. 169, High-street, Stoke Newington. Mr. E. A. Lewcock, architect, Bishopsgate-street Within:—

Hill	£173	0	0
Pringle	163	0	0
Batchelder	163	0	0

WILLESDEN.—For completing twelve houses in Dean-road and two houses in Poplar-avenue, Willesden Park, for Mr. H. W. Wilson. Mr. F. Shaw, architect, Harlesden:—

J. Ransom, Westbourne Park	£5,436	0	0
Church & Co., Coleman-street	4,777	0	0
G. Hardy, Harlesden	4,553	0	0
A. E. Addis, Hounslow	4,500	0	0
E. & E. Evans, Peckham	4,400	0	0
J. Greenwood, Mansfield	4,300	0	0
A. Clissold, Ealing	4,250	0	0
Cowley & Drake, Willesden Green	4,125	0	0
Hatcher & Green, Islington	3,998	0	0
Webb & Rosser, Hammersmith	3,975	0	0
T. W. Knight, Finsbury Park	3,902	13	6
R. L. Wood, East Greenwich	3,775	0	0
W. Martin, Willesden Green*	3,714	0	0

* Accepted.

Home for Police-Recruits, Kennington.—Mr. P. H. Dawes, of King's Lynn, writes, "On perusing your edition of the 6th, in list of tenders 'Home for Recruits, Kennington-lane,' I note you give the name of Down, 5,190*l.*; it should be Dawes, 5,199*l.*"

WALTHAMSTOW.—For New school for boys, Gamuel-road, for the Walthamstow School Board. Mr. W. A. Longmore, architect, Great Alie-street. Quantities by Messrs. J. E. Goodchild & Son:—

Simpson	£4,340	0	0
Malton & Wallace	4,223	0	0
Read	4,180	0	0
W. Wood	4,100	0	0
Good	3,886	0	0
Sayer	3,808	0	0
Garrod	3,685	0	0
Martin	3,620	0	0
Bell & Son	3,591	0	0
E. C. Howell & Son	3,568	0	0
Church & Co.	3,542	0	0
Robson	3,499	0	0
Scott	3,493	0	0
Tagg	3,485	0	0
G. Parker	3,459	0	0
G. & J. Green	3,393	0	0
M. A. Palmer & Co.	3,375	0	0
Stevenson	3,366	0	0
Evans	3,195	0	0
J. Godfrey & Son	3,180	0	0

For New Class Rooms for the above.

Good	£945	0	0
Simpson	870	0	0
W. Wood	870	0	0
Malton & Wallace	849	0	0
Bell & Son	849	0	0
Church & Co.	829	0	0
Read	810	0	0
Sayer	808	0	0
E. C. Howell & Son	797	0	0
Martin	769	0	0
Robson	768	0	0
Ede & Son	745	0	0
M. A. Palmer & Co.	745	0	0
Scott	743	0	0
G. Parker	735	0	0
Stevenson	734	0	0
Evans	712	0	0
G. & J. Green	694	0	0
J. Godfrey & Son	645	0	0

SPECIAL NOTICE.—Lists of Tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

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Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds, and milk-rooms, granaries, tun-rooms, and terraces. [ADVT.

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